

## Noctuoidea (Lepidoptera) from Cyprus with descriptions of larvae of some species

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A list of species collected is presented with notes on collecting sites. Larvae of *Agrochola orientalis* Fibiger, 1997 *Agrochola lychnidis* (Denis & Schiffermüller, 1775), *Ammoconia aholai* Fibiger, 1996, *Allophyes asiatica* (Staudinger, 1892) and *Polymixis trisignata* (Ménétriés, 1847) are described and illustrated. Comparative comments with some closely related species are given.

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### 1. Introduction

During two trips to Cyprus especially Noctuidae were observed. The first time in December 1993, I spent some thrilling moments after lights were turned on and sugar-baits were hanging from the twigs near the ruins of Salamis. It was the night of Christmas Eve, some minutes past 17:00 at sunset. The first half hour my 40-W tube-lights were empty and it was time to visit the sugar-baits. As usual, I used ropes with sugar and red wine. I slowly approached the first bait and found some moths sitting on the rope! In a short while the first moths were in my net. Never before had I been in a Mediterranean area collecting moths at this time and did not know, which species might fly at the end of the year.

My friend Mr. Jyrki Lehto and I collected moths between 30.XII.1993 and 5.I.1994 in the area north of Salamis and on the Five Finger Mountains along the northern coast from Girne to Dipkarpaz. For the rest of my first trip and during my second trip on 21–26.12.1994 I worked alone. A list of collecting sites and species is pre-

sented in Table 1. Names and systematics follow Nowacki and Fibiger (1996), with one exception.

### 2. Methods

Moths were collected between 23.XII.1993–5.I.1994 and 21.XII–26.XII.1994 the usual way by using light and sugar-baits. On the first trip, a Honda generator ran four tube-lights, two of them were 40-W Phillips tubes with bluish light and two 20-W Insect-o-Cutor tubes with greenish light. On the second trip, only sugar-baits were used because of rather poor lighting results. Ten to 15 sugar ropes, each 3–4 m long, were hung in the vegetation every night. Sugar and wine were used as bait. The best time for baiting was just after sunset between 17:00 and 19:00, at other times the ropes hung empty. For the rearings some females were taken alive with the purpose of egg-laying. After eggs were laid, the rearings were performed at room temperature. The habitus of the last instar larvae were described and documented by photographing, the larvae were preserved in alcohol or dried by blowing and mouth parts were prepared in Euparal and drawn with a Wild binocular drawing tube. Hinton's (1946) names of setae are used in chaetotaxy as interpreted by Ahola (1986). The description of ornaments follows Beck (1974).



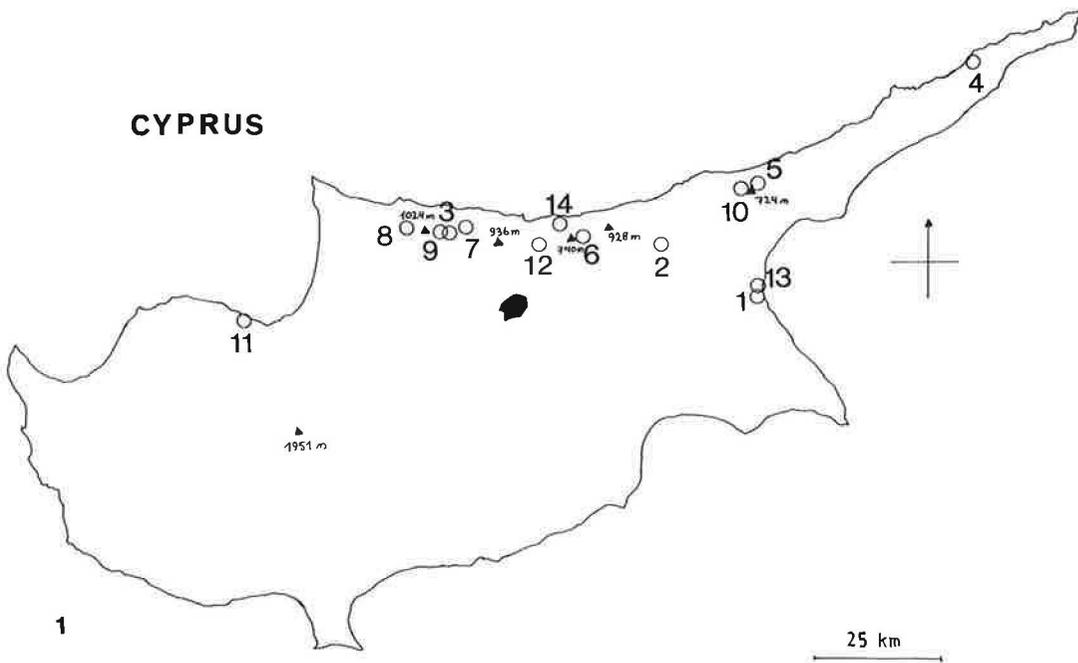


Fig. 1. A map of Cyprus. Numbers of collecting sites (encircled) refer to those presented in Table 1, black triangle shows the highest tops of the Five Finger Mountains and Troodos. Black fleck in the middle is Nicosia/Lefkosa, the capital city of Cyprus.

### 3. Collecting sites

All localities are shown in Fig. 1, numbers refer to the map. There are two mountains in Cyprus. Peaks of Troodos mountains are higher, reaching 1 951 m while the other one, Besparmak Daglari also called the Five Finger Mountains, is lower reaching 1 024 m on the highest top of Selvilt tepe. During both trips this mountain was of great interest to me. According to the English name of the mountain, there are five peaks and Selvilt tepe situated westermost. The other "fingers" of the mountain from west to east are Komando tepe, Besparmak tepesi, Yayla tepe and Sinan tepe. The southern slopes of the mountain are dry with macchia-vegetation whereas the northern part is shielded by trees, mostly *Pinus*. Woodlands, especially with shade trees predominating, are scarce. For example, I only found *Ilex* species near Kantara (collecting sites 5 and 10, altitude about 500 m). This place is rather rich with deciduous trees and bushes. Sites 6 and 12 were situated in *Pinus*-forest, on the ridge of the mountain, alti-

tude about 600 m. Site numbers 3 and 9 were situated high on the dry southern slopes near Akcicek, altitude about 800 m, and number 8 in a lower place close to Kozan, at about 400 m. Locality number 2 was near Camlica, on the southern foothills of the mountain at about 200 m. Other collecting localities were on the coastal area, numbers 1 and 13 close to the Salamis ruins on the beach, number 4 near Dipkarpaz on sand downs, number 11 near Yedidalga at the foot of the Troodos mountain and number 14 in *Pinus* forest close to the path to Besparmak village.

### 4. Larval descriptions

#### 4.1. *Agrochola orientalis* Fibiger, 1997

Material examined: 2 larvae in last instar ex ovo, female collected near Sinan tepe to the west of Kantara 22.XII.1994.

Mouthparts (Figs. 2–5 and 21): Spinneret rather stout, about  $2.8 \times$  its width, dorsoventrally flattened with one groove above, slightly taper-

ing distad. Labial palps with relatively thick first segment (Lps1), about  $1.8 \times$  its width; length of seta Lp2 about  $3 \times$  that of seta Lp1. Stipular setae relatively long, as long as width of Lps1. Distal region of hypopharynx covered by short spines, letters refer to Fig. 14; spines of distal lateral group (a) stouter and longer, about  $3 \times$  length of spines of distal medial group (b). Spines of distal anterior (c) and distal posterior (d) groups short. Posterior region of hypopharynx with row of weak lateral spines (e), dorsolateral spines (f) and spines located behind lateral group (h) nearly equal in size, those of posteromedial group (g) are very thin and short. Spines of d and g groups formed into open circles. Mandible with six teeth of cutting margin and three parallel ridges on inner surface, first and second ridge slightly swollen, inner teeth absent.

Head (Fig. 24): Pale yellowish- or greenish-brown, darkness varies. Stripes and reticulation well visible except on vertex; coronal stripe brownish, narrow, frontal stripe pale grey or whitish, joined with anterior zone, supraocellar stripe darker from A3 to La, ocellar stripe weak. Frons pale or dark greenish-grey, darker than whitish adfrons. Ocellar zone narrow, white; genae pale greenish-grey. First antennal segment brown, second paler reddish-brown.

Shields: Ground colour green. Cervical shield with narrow, pale green middorsal line and white subdorsal line, which is broken into spots. Setal rings green, base-spots and pores white; suture punctures colourless, those of the lateral group forming a line on the margin of the shield. Lines of the anal shield weak, broken to spots on anterior part; setal rings green with narrow, white bases. Suture punctures colourless.

Body (Figs. 25 and 26): Only green phase of larvae available for study. Middorsal and subdorsal lines narrow, white, broken into spots and bordered by dark grey or dark violet-grey margins; spiracular line white or yellowish-white, broad with sharp, narrow, dark dorsal margin and also clear ventral edge between pleural zone and line. Setal bases white, dorsally bordered by dark green or greyish margins. Spiracles pale yellow with black rims, situated on spiracular line except those of segment S8. Prolegs green with strong reddish colour on base of crochets; thoracic legs brown or reddish-brown.

Egg (Fig. 23): Plain pale brown.

Host: In ex ovo rearing larvae fed on lettuce.

Similar species: The larva of *A. orientalis* is close to both *A. liturra* (Linnaeus, 1758) and *A. meridionalis* (Staudinger, 1871). It differs from both related species as follows: subdorsal lines on shields are broken into white spots; violet tinge present on margins of subdorsal line on abdomen; ventral edge of spiracular line sharp; strong reddish colour on the apex of prolegs and thoracic legs red or reddish-brown. In addition shape of spinneret is stouter. Larva of *A. meridionalis* has slender Lps1 of labial palpus, about twice its width. Comparative scheme of spines of hypopharynx between *A. orientalis* and related species in Fig. 21.

#### 4.2. *Agrochola lychnidis* (Denis & Schiffermüller, 1775)

Material examined: 2 last instar larvae ex ovo, dark female collected at Kantara 29.XII.1993.

Mouthparts (Figs. 6–9 and 21): Spinneret slender, length more than  $3 \times$  its width, with groove on dorsal surface. Labial palpus with short Lps1, length about  $1.6 \times$  its width, and weak seta Lp1, length of Lp2 more than  $3 \times$  that of Lp1. Stipular setae as long as width of Lps1. Distal region of hypopharynx covered by short spines; spines of distal lateral group (a) stouter and longer, about  $2 \times$  length of spines of distal medial group (b). Spines of distal anterior (c) and distal posterior (d) groups short. Posterior region of hypopharynx with row of weak lateral spines (e), dorsolateral spines (f) and spines located behind lateral group (h) nearly equal in size, those of posterior medial group (g) are very thin and short. Spines of d and g groups formed into open circles. Mandible with six teeth of cutting margin and three parallel ridges on inner surface, inner teeth absent.

Head (Fig. 27): Pale yellowish-brown. Stripes narrow, weak, pale yellowish-brown, other figures weak but all reticulation groups visible, frons and genae pale yellowish-brown, adfrons and anterior zone between antennae and seta A1 whitish-grey, ocellar zone narrow, whitish, antennal segments pale yellowish-brown.

Shields: Cervical shield green also in brown

larvae. Middorsal line white, narrow, bordered by dark greyish-green margins on posterior part of shield; subdorsal line broken to white spots cephalad from pore XDc and seta D2; setal rings and pores pale green encircled with white bases; suture punctures pale green, lateral suture punctures longitudinally on ventral margin of shield. Anal shield pale yellowish-brown with white, narrow but continuous lines; setal bases white.

Body (Figs. 28 and 29): Groundcolour green or pale brown, most prominent figure is dark brown, blackish or dark green, broad transverse spot between setae D1-D1 on the back and broad blackish dorsal margin of subdorsal line between setae D1 and D2 joined together with transverse spot on abdominal segments S1-8. Middorsal, subdorsal and supraspiracular lines present but narrow, white, the latter broken to spots and hardly visible, all bordered by dark grey or brown margins; spiracular line broad, pure white, dorsally bordered by dark brown or green margin enlarged to black, broad spot between setae L1 and SD2 on segments SII-S8. Setal rings green or brown with white base-spots encircled by darker green or brown colour. Pleural and ventral zones pale green or pale brown with white setal bases. Prolegs pale green or pale brown with cuff of same colour; thoracic legs pale brown.

Host: In ex ovo rearing larvae fed lettuce.

Note: Larva of Cypriot *A. lychnidis* differs habitually from my material from Germany. In the first place, black figures on the back and prominent black spots around spiracles arouse astonishment. In addition, Lps1 of labial palpus is longer and more slender (length twice its width) and lateral teeth of hypopharynx stouter and longer in German material. According to Gómez de Aizpúrua (1987), Spanish larvae of the species are close to those from Germany. Spines of hypopharynx of both populations are compared in Fig. 21 with those of *Conistra vaccinii* (Linnaeus, 1761).

#### 4.3. *Ammoconia aholai* Fibiger, 1996

Material examined: 3 last instar larvae ex ovo, female collected near Sinan tepe to the west of Kantara 22.XII.1994, 1 larva ex ovo, female collected at Yedidalga 23.XII.1994.

Mouthparts (Figs. 10-13 and 22): Spinneret dorsoventrally flattened, length about 3× its width,

dorsal groove present; length of spinneret equal to that of labial palpi. Lps1 long and slender, length more than twice its width and 1.5× Lp2. Seta Lp2 3× longer than seta Lp1. Stipular setae shorter than width of Lps1. Distal region of hypopharynx covered by short spines; spines of distal lateral group (a) stouter and longer, about 3× length of spines of distal medial group (b). Spines of distal anterior (c) and distal posterior (d) groups short. Posterior region of hypopharynx with row of 10-11 strong lateral spines (e), dorsolateral spines (f) very weak and short equal to those of posterior medial group (g). Spines of g-group occur on frontal part of area and form into open circles. Spines located behind lateral group (h) slightly longer than those of f group. Mandible with three inner ridges terminating on strong process before cutting margin and one strong inner tooth on first ridge.

Head (Fig. 31): Ground colour pale brown, stripes narrow, pale brown, bands of reticulation same colour, fields weak pale yellowish-grey. Reticulation weak but available. Frons, adfrons, ocellar zone and genae pale yellowish-brown.

Shields: Yellowish-brown. Cervical shield with narrow, pale grey middorsal line bordered narrowly by dark brown colour, subdorsal line only pale grey spot on anterior margin. Lines absent on anal shield. Setal punctures brown encircled by white, relatively large bases. Dark grey transverse band bordered cervical shield on the neck.

Body (Fig. 32): Brown with very obscure lines, middorsal line broken to weak, whitish spots, bordered by narrow dark brown margin, which is weakly enlarged intersegmentally, subdorsal line visible only because of narrow, dark brown dorsal border, spiracular line white, narrow dorsal part continuous. Bases of D1, D2 and SD1 setae white, encircled dorsally by dark brown border, other figures absent. Spiracles pale yellowish-white with black rings.

Egg (Fig. 30): Pale grey with reddish-brown spot on micropyle area and narrow, reddish band around egg.

Pupa (Fig. 33): Two strong setae on top of cremaster.

Hosts: In ex ovo rearings lettuce accepted as food.

Similar species: Larva of *A. senex* (Geyer,

1828) is close to *A. aholai* but the reticulation of head is absent, ocellar zone of head is narrow, white, cervical shield more greyish, dark border of middorsal line of shield obscure but clear on body intersegmentally forming enlarged blackish spot, spiracles of body dark yellow. In addition, larvae of *A. senex* possess longer spinneret ( $3.5 \times$  its width and longer than labial palpi), shorter Lps1 ( $1.7 \times$  its width) and weak seta Lp1 (Lp2 nearly  $5 \times$  Lp1). The brown phase of larva of *A. caecimacula* (Denis & Schiffermüller, 1775) resembles that of *A. aholai* but the reticulation of head absent on lateral part, dark brown spot present on ventrad from 1st–4th ocelli on head, cervical shield darker brown without dark grey anterior margin and subdorsal line visible on thorax and S1–4 abdominal segments. Seta Lp2 of labial palpus is long (length of Lps1 shorter than Lp2). Spines of hypopharynx compared in Fig. 22.

#### **4.4. *Allophyes asiatica* (Staudinger, 1892) ssp. *cypriaca* Boursin, 1967**

Material examined: 6 last instar larvae ex ovo, female collected at Camlica 26.XII.1993.

Mouthparts (Figs. 14–16 and 21): Spinneret long, about  $7 \times$  its width, tubular with shallow groove on dorsal surface, together with labial palpi pushed forward. Lps1 of labial palpi elongated, about  $2.5 \times$  its width; setae of palpi short, length of Lp2 about one half of that of Lps1. Seta Lp2 twice as long as Lp1. Anterior (c) and medial (b) part of distal region of hypopharynx bare, spines of lateral part of region (a) long and stout. Lateral row of spines (e) on posterior region consists of 10–12 stout spines, those of dorsolateral part (f) and behind lateral row (h) nearly as long and stout and equal in size. On medial part of posterior region there are a few weak spines as well. Mandible with strong tooth-like retinaculum and three ridges on inner surface joined together, first and second ridges with inner teeth; ridges terminating in process before cutting margin, third ridge short with broad process. First tooth of cutting margin very weak or absent, 2–4th teeth strong, 5th weak or absent and 6th present but reduced in size.

Head (Fig. 35): Brown, coronal stripe obscure; frontal stripe black, broad, parallel sided; on ver-

tex between setae P1–2 black transverse spot bordered by white; five groups of reticulation visible, 1st, 2nd and 5th groups blackish, clear, 3rd and 4th groups weak; frons reddish-brown with white margins and black spots; adfrons greyish-brown, darker; anterior zone white; ocellar zone brown between Oc3–4 and white Oc5–6; antennal segments pale yellowish-brown.

Shields: Ground colour brown and violet-grey, cervical shield with narrow, pale grey middorsal and subdorsal lines, both bordered by black, sharp margins; dorsal zone violet-grey, subdorsal zone pale grey with narrow, white setal bases; anal shield brown, middorsal line pale grey visible on anterior part, subdorsal line absent; setal and other punctures brown.

Body (Figs. 36 and 37): Body brown with white oblique line on S1 and blackish on S7 and enlarged D2 warts on S8. Middorsal line broad, pale greyish, split by reddish, brown longitudinal stripe and bordered sharply by black, winding, narrow margins; white addorsal line between D1–2 setae clear on S3–7 dorsally bordered by black margin caudad from D2; subdorsal line reddish between D1–2 setae, greyish caudad from D2 and broken on S1 and S7 because of white oblique stripe, bordered by black, winding, sharp margins; in the place of supraspiracular line yellowish-white spots on prothorax and reddish-brown cephalad from SD1 setae; spiracular line split by yellowish-grey dorsal and pale reddish-grey ventral stripe, both with black margins; ventral line dark brown broken into large spots on S1–2 and S7. Dorsal and subdorsal zones outside lines grey with reddish-brown spot dorsocephalad from D2 and reddish-brown area dorsad from SD1. Pleural and ventral zones whitish with dark colour elements. Oblique stripes present on S1 and S7–8, that of S1 white, running from D2 seta to spiracle and bordered cephalad by black, broad margin. Setal bases of D and SD groups white with black cephal margins, those of S1–2 segments enlarged. Spiracles grey with black rims, situated on white fleck, which enlarged on S1. Abdominal prolegs pale grey with pale violet cuff, thoracic legs pale grey.

Hosts: In ex ovo rearings larvae fed on *Prunus padus*.

Similar species: Other larvae of the genus. Hypopharyngeal complex of the genus resembles that

of the genus *Cucullia* Schrank, 1802. A larva of *A. asiatica cypriaca* resembles mostly that of *A. oxyacanthae* (Linnaeus, 1758). The latter, however, has yellow ocellar spot and colourless antennal segments on head; yellowish-brown subdorsal zone of cervical shield; white, short subdorsal line on anterior part of anal shield; white colour between D2–D2 setae on S9; large black area between MD1–D1–D2 setae on S1 and oblique stripe broader bordered by black cephal margin; abdominal segments S7–8 blackish; spiracles yellow; prolegs with reddish cuff and thoracic legs reddish-grey. In addition, lower lip of spinneret is elongated and seta Lp1 is longer (Lp2 only slightly longer than Lp1). A larva of *A. alfaroi* Agenjo, 1951 seems to be more plain brown with weak, yellowish oblique lines. The black, broad cephal margin of cervical shield is the most prominent figure of this larva. Spines of hypopharynx compared in Fig. 21.

#### 4.5. *Polymixis trisignata* (Ménétriés, 1847)

Material examined: 4 last instar larvae ex ovo, female collected at Akcicek 27.XII.1993, 10 last instar larvae ex ovo, female collected near Besparmak village 26.XII.1994 and 3 last instar larvae ex ovo, female collected near Salamis ruins 3.I.1994.

Mouthparts (Figs. 17–20 and 22): Spinneret dorsoventrally flattened, length about  $3 \times$  its width, dorsal groove present; length of spinneret equals that of labial palpi. Lps1 long and slender, length more than twice its width and as long as Lp2. Seta Lp2  $7 \times$  longer than seta Lp1. Stipular setae shorter than width of Lps1. Distal region of hypopharynx covered by thin spines; spines of distal lateral group (a) stouter and longer, nearly  $3 \times$  length of spines of distal medial group (b). Spines of distal anterior (c) and especially distal posterior (d) groups shorter. Posterior region of hypopharynx with row of 8–9 strong lateral spines (e), dorso-lateral spines (f) very weak and short, equal to those of posterior medial group (g). Spines of g-group absent. Spines located behind lateral group (h) slightly longer than those of f group. Mandible with three inner ridges terminating on strong process before cutting margin and one strong inner tooth on first ridge. First tooth of cutting margin weak.

Head (Fig. 38): Pale brown or darker brown with more or less sharp stripes and reticulation. Stripes greyish-brown, frontal stripe joined with anterior zone and supraocellar stripe. Setal punctures brown without base-spots. Bands of reticulation greyish-brown, sharp, narrow; fields pale yellowish-brown; all groups of reticulation present. Genae, frons and adfrons pale yellowish-brown, darker between F1–F1 setae. Ocellar zone with yellowish-white spots around Oc1–4 and Oc5–6. First antennal segment pale brown, second hyalin, paler.

Shields: Ground colour green or greyish-brown. Middorsal line of cervical shield narrow, continuous, white; subdorsal line broken to white spots; both lines present as white spots cephalad from D1 on anal shield. Setal punctures green with narrow, white bases; those of sutures colourless.

Body (Figs. 39 and 40): Ground colour green or greyish-brown, most prominent figure is dark brown or greyish-brown herring-bone pattern on back. Both middorsal and subdorsal lines broken into small, white spots being hardly visible, bordered by dark greyish-brown margins which are joined to herring-bone pattern between D1 and D2. Spiracular line white but filled by greyish colour elements, sometimes only dorsal part of line narrowly pure white; line dorsally bordered by narrow dark brown margin. Base-spots of MD-, D- and SD-setae white, bordered by blackish dorsal spots. Abdomen filled by rounded, small, white punctures between darker brown or blackish irregular colour elements. Spiracles white with black rims, situated on dorsal margin of spiracular line. Prolegs greenish-grey with weak cuff of same colour; thoracic legs pale brown.

Host: In ex ovo rearings larvae fed on lettuce.

Similar species: Larva of *P. trisignata* is close to *P. leuconota* (Herrich-Schäffer, 1850). My material of the latter is still too scarce (2 larvae preserved in alcohol) to search valid for differences between larvae of these taxons. Stipular setae of *P. leuconota*, however, seem to be shorter (about half of the width of Lps1 of labial palpus). Some authors e.g. Hacker and Ronkay (1992) and Beck (1996) consider these taxons synonym, whereas, according to Nowacki and Fibiger (1996), they are bona species. The scheme of spines of hypopharynx are shown in Fig. 21 and compared with those of *Polymixis rufocincta* (Geyer, 1828).

## 5. Discussion

As Fibiger (1992) mentioned, collecting trips to countries bordering the Mediterranean Sea reveal remarkable gaps in our knowledge of the diversity and distribution of the moth fauna. The discoveries made during my two short excursions to Cyprus show that collection during an unusual period, now in late December, gives surprising results on this island. For example, Malicky (1992) has recently reported some Lepidoptera from Cyprus, but earlier Rebel (1916–1939), Wiltshire (1948–1951) and Wimmer (1985) have published many species occurring on the island. According to Hacker (1990), there are some species on my list not or seldom found in the Near East before. Hacker (1996) listed 186 species of Noctuidae occurring on the island and Hacker and Oswald (1996) reported one additional species. On the basis of my two collecting trips, six species must be added to the Cypriot moth fauna. These are:

*Trichoplusia vittata* (Wallengren, 1856) earlier found in the Arabian Peninsula. During my first trip one female of this African species came to the sugar rope near Camlica. Recently the species has been reported also in England.

*Agrochola orientalis* is a new species (Fibiger, 1997) close to *A. litura* and *A. meridionalis*, both larvae and imagines. This species seems to occur mainly on Five Finger Mountains from Bufavento to Kantara, only one specimen came to the sugar rope near Yedidalga. This place is located on the northern foot of the Troodos Mountains. Collecting sites at Kantara and Sinan tepe are located on the northern side of the mountain ridge where the vegetation is more luxuriant.

*Conistra rubricans* Fibiger, 1997 belongs to the fauna of the Five Finger Mountains too; the species was especially abundant at Kantara. All specimens were collected by sugar ropes. Some females were collected alive in order to get eggs. After one week, I found five eggs in one of the plastic boxes. Two of the hatched larvae grew to the last instar from which it appeared that larvae must belong to the genus *Agrochola*. In the same box there was earlier one female of *A. lychnidis* and these eggs escaped my attention. This species occurs also on the Troodos Mountain (Fibiger, 1997).

*Ammoconia aholai*, again a new species to the

fauna of the Five Finger Mountains. Only two specimens were found close to the coast, one near Dipkarpaz in the dune area and one at Yedidalga. All other specimens were collected higher (400–800 m) and mostly on the dry southern slopes of the mountain. According to Fibiger (1996, 1997), it has not been described earlier but was found at Limassol as early as 1933.

*Polymixis trisignata* occurs according to Nowacki and Fibiger (1996) in Russia, and *P. leuconota* (Herrich-Schäffer, 1850) is the most wide spread species in the Mediterranean area. Based on my larval material, both taxons seem to be very close together, more material is needed to find some differences. However, imagines from Cyprus were determined as *P. trisignata* by Fibiger. According to Hacker (1996), the species is not new to Cyprus.

*Polymixis aphrodite* Fibiger, 1997 occurs high on the mountain (400–800 m) and mostly on dry southern slopes. This new species seems to be rare, only six specimens came to the sugar ropes at Akcicek, Bufavento and Sinan tepe. Later found in the Troodos Mountains by Fibiger, Nilsson and Svendsen (Fibiger 1997).

*Nola aegyptiaca* Snellen, 1875 occurs in North Africa, described from Egypt. One female of this African species came to the light near the ruins of Salamis on the southern coast of the island.

Larvae of *A. lychnidis* show that some Cypriot populations possess differences in larval stages when compared with those of the continent. The same difference of habitus seems to occur in the larvae of *P. rufocincta*, which is green on the continent but reddish on Cyprus. In addition, the larvae of *Cucullia calendulae* Treitschke, 1835 collected from Tenerife, Canary Islands, habitually differ a lot from those of Cypriot specimens. The food-plant, *Calendula vulgaris*, is the same on both islands. Probably this tendency is widespread among Noctuidae.

Beck (1996) placed the genus *Allophytes* to Cuculliinae whereas Nowacki and Fibiger (1996) retained it in Hadeninae. Based on the larval morphology, the genus has close relatives in the subfamily Cuculliinae, and here I adopt Beck's opinion. In recent years the systematics of the Noctuidae have been changed many times. I believe that a careful study and a cladistic analysis based on both larval and imaginal characters may bring

forth a more stable system in future.

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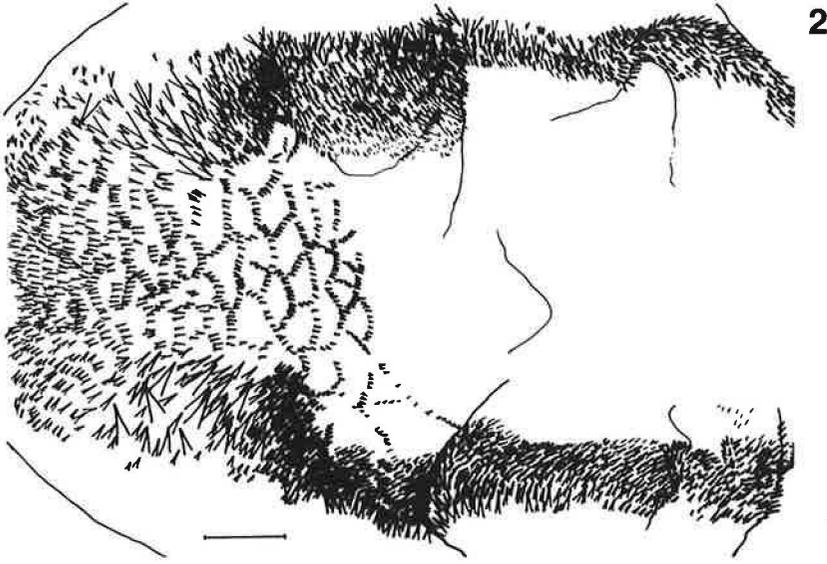
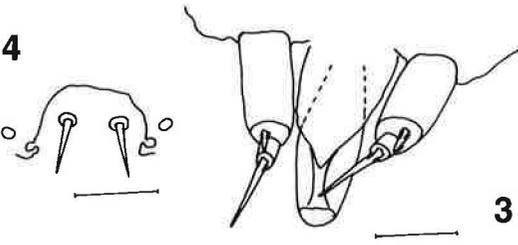


Fig. 2. Hypopharynx on dorsal view of larva of *A. orientalis*. Scale 0.1 mm.



Figs. 3 and 4. Larva of *A. orientalis*. — 3. Spinneret and labial palpi in dorsal view. — 4. Stipular setae. — Scale 0.1 mm for 3 and 4.

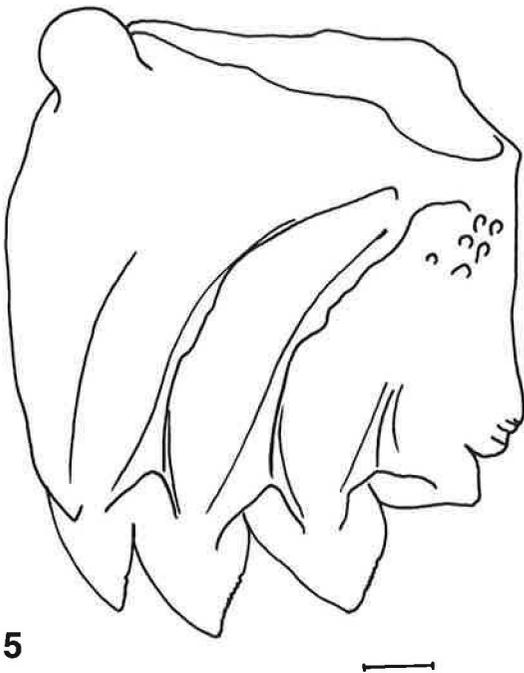


Fig. 5. Inner surface of left mandible of larva of *A. orientalis*. Scale 0.1 mm.

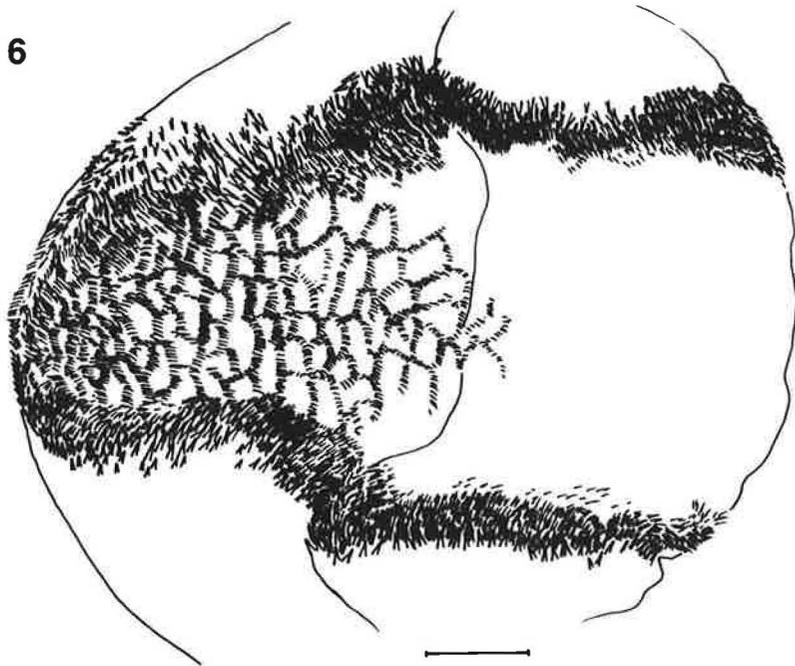
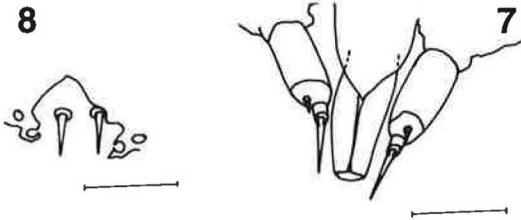


Fig. 6. Hypopharynx on dorsal view of larva of *A. lychnidis*. Scale 0.1 mm.



Figs. 7 and 8. Larva of *A. lychnidis*. — 7. Spinneret and labial palpi. — 8. Stipular setae. — Scale 0.1 mm for 7 and 8.

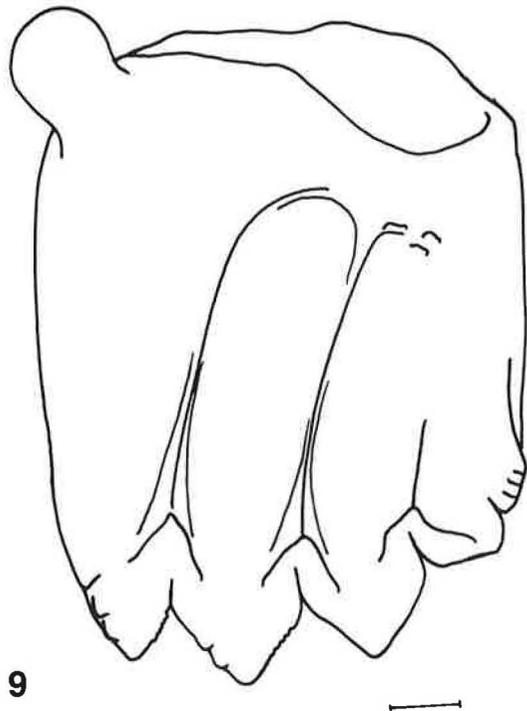


Fig. 9. Inner surface of left mandible of larva of *A. lychnidis*. Scale 0.1 mm.

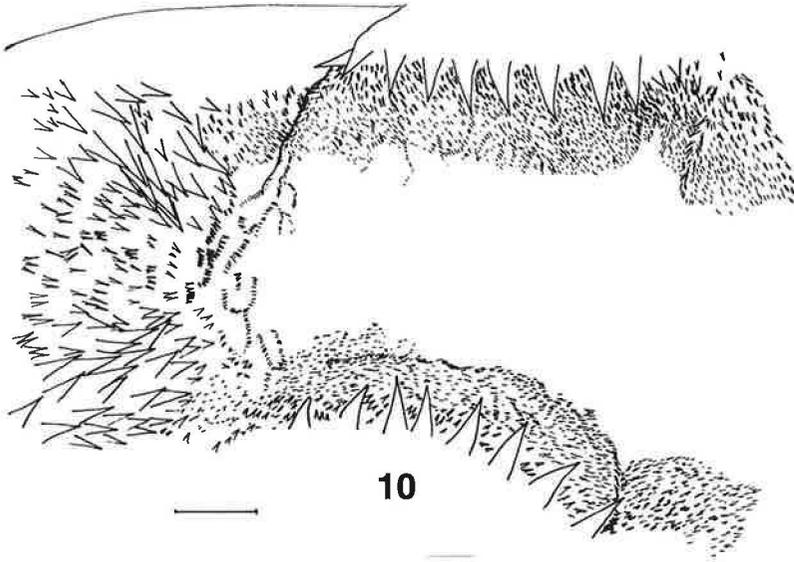
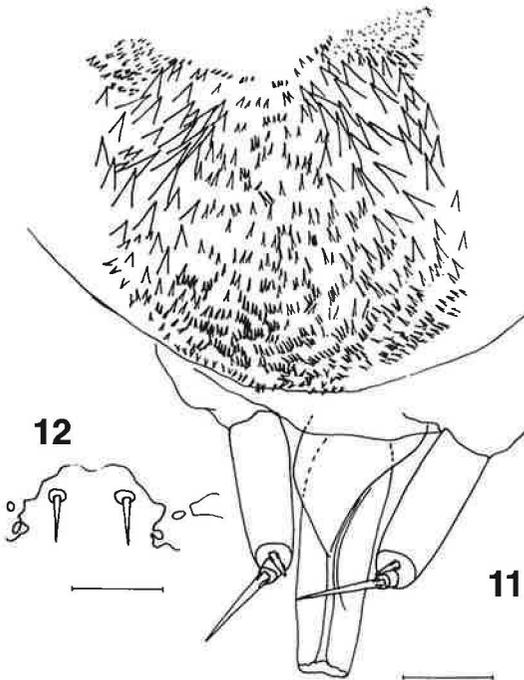


Fig. 10. Posterior region of hypopharynx on dorsal view of larva of *A. aholai*. Scale 0.1 mm.



Figs. 11 and 12. Larva of *A. aholai*. — 11. Spinneret, labial palpi and distal region of hypopharynx. — 12. Stipular setae. — Scale 0.1 mm for 11 and 12.

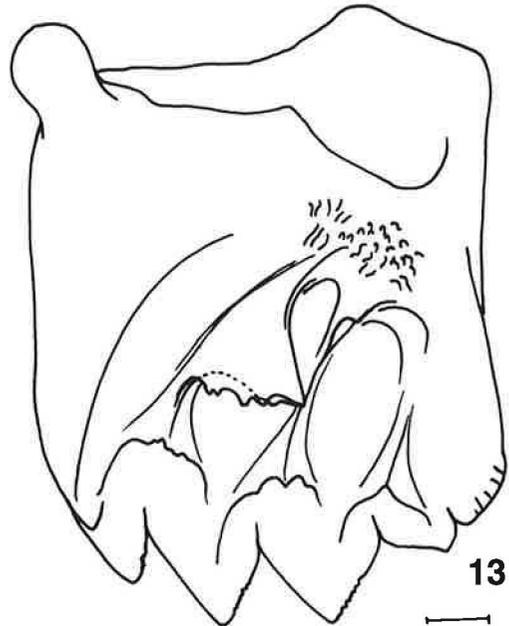
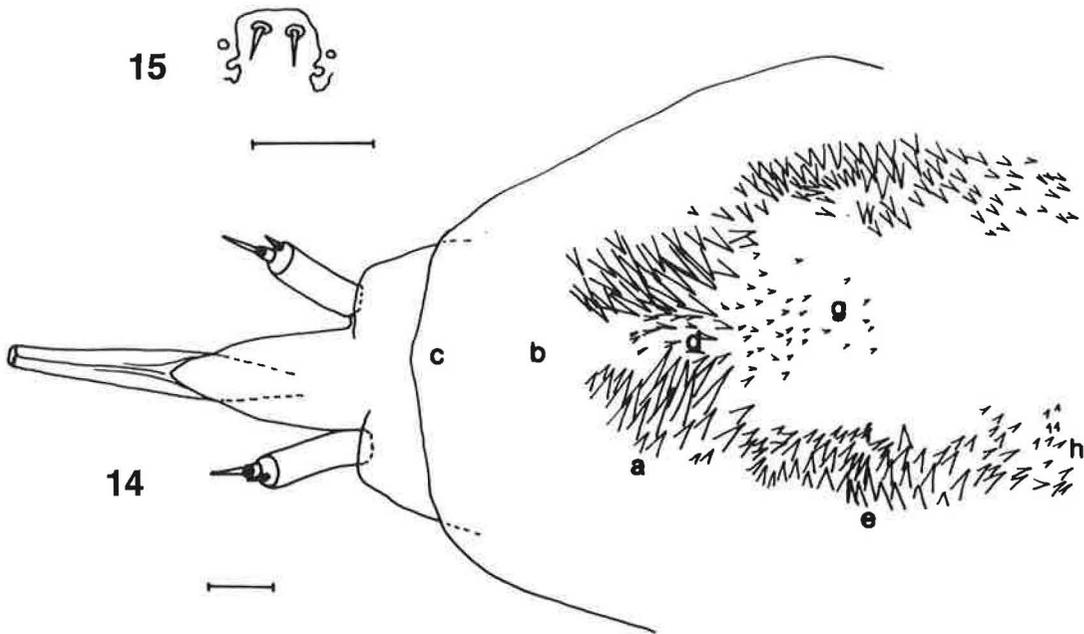


Fig. 13. Inner surface of mandible of larva of *A. aholai*. Scale 0.1 mm.



Figs. 14 and 15. — 14. Hypopharyngeal complex of *A. asiatica*. Letters show the different groups of spined area as follows: a = distal lateral spines, b = distal medial spines, c = distal anterior spines, d = distal posterior spines, e = lateral teeth (a row of differentiated lateral spines of posterior region), f = dorsolateral spines of posterior region, g = posteromedial spines and h = spines behind of lateral teeth. — 15. Stipular setae of larva of *A. asiatica*. — Scale 0.1 mm for 14 and 15.

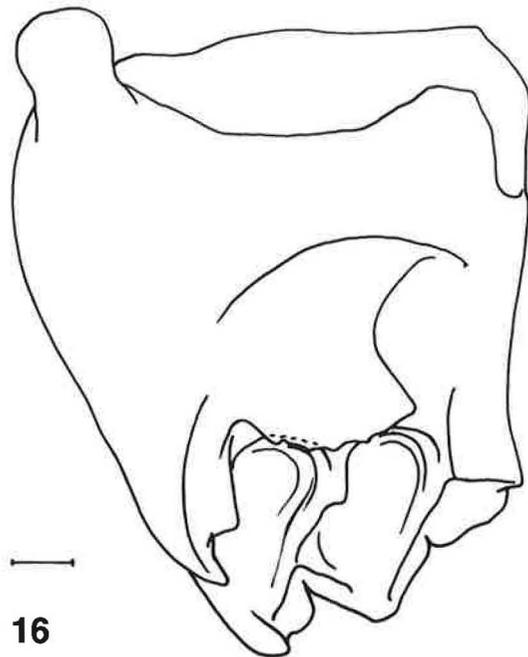


Fig. 16. Inner surface of mandible of larva of *A. asiatica*. Scale 0.1 mm.

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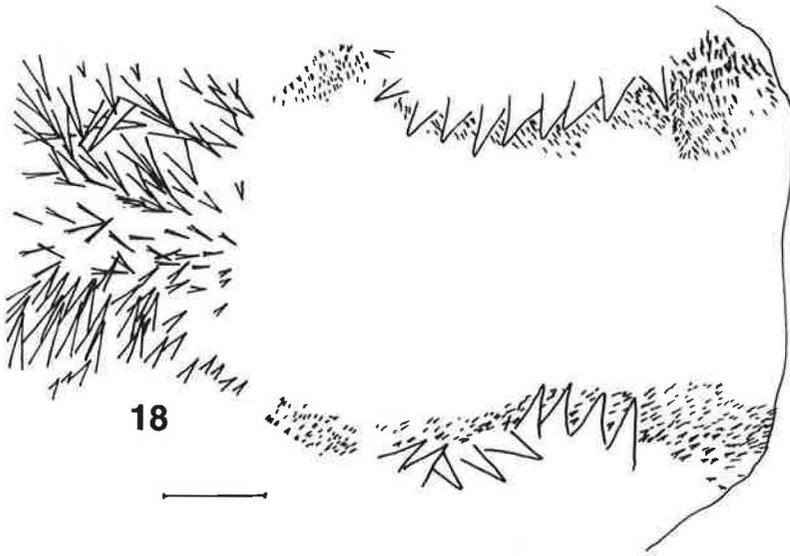


Fig. 18. Posterior region of hypopharynx of larva of *P. trisignata*. Scale 0.1 mm.

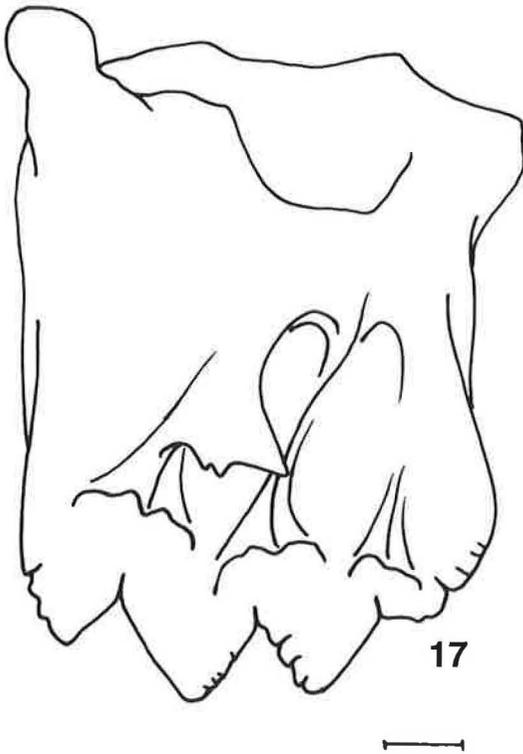
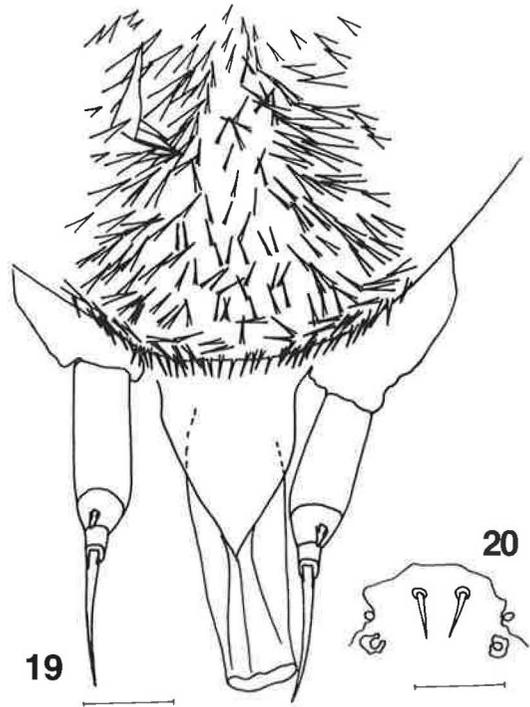
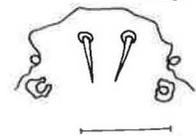
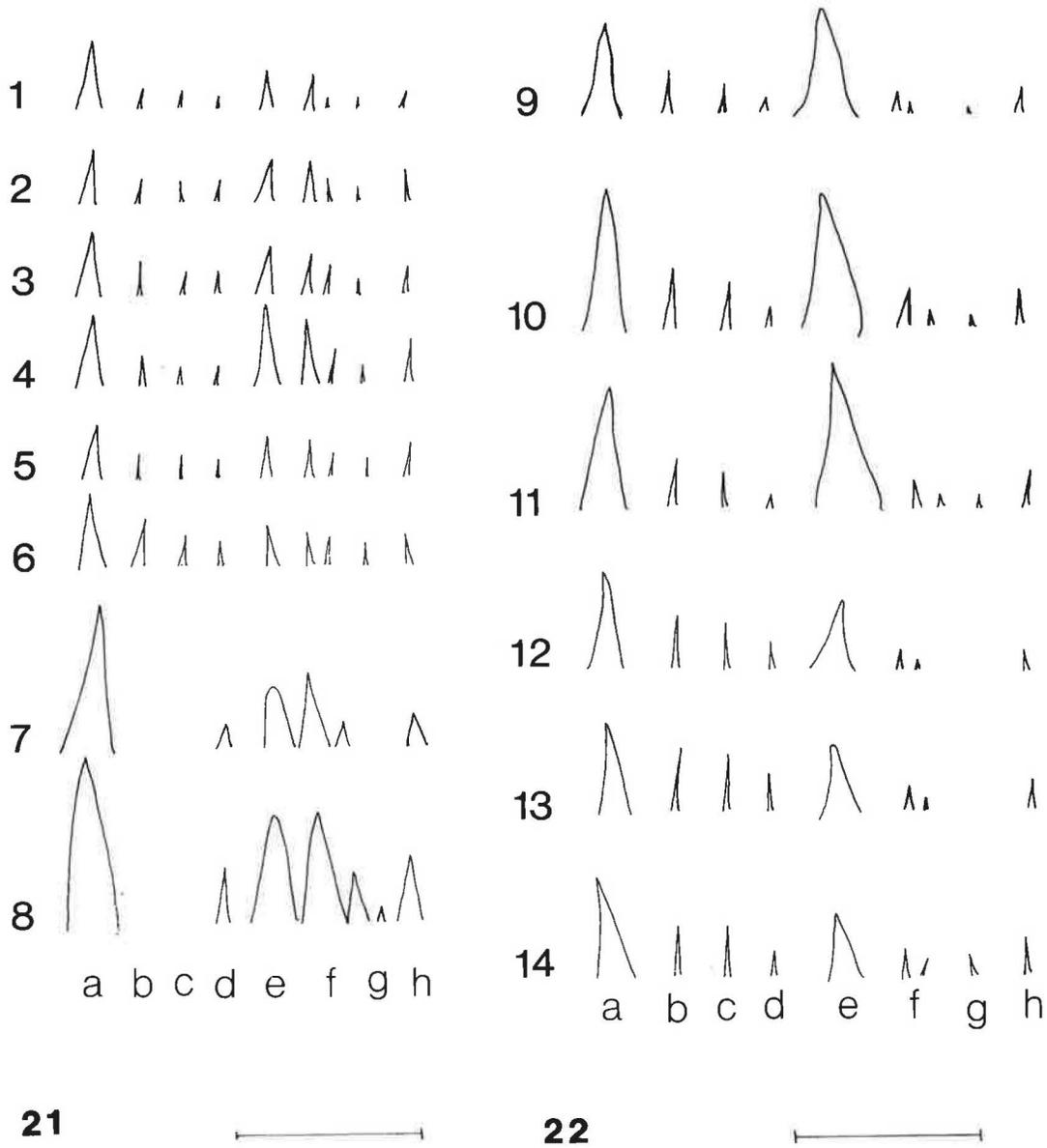


Fig. 17. Inner surface of mandible of larva of *P. trisignata*. Scale 0.1 mm.



Figs. 19 and 20. Larva of *P. trisignata*. — 19. Spinneret, labial palpi and distal region of hypopharynx. — 20. Stipular setae. — Scale 0.1 mm for 19 and 20.





Figs. 21 and 22. Scheme of spines of hypopharynx, for letters refer to Fig. 14. Group f (dorsolateral spines) presented with two spines; the left one drawn from spines close to lateral teeth and the right one from spines located close to posteromedial part of hypopharynx. — 21. Species: 1. *Agrochola orientalis* (Cyprus), 2. *Agrochola meridionalis* (Spain), 3. *Agrochola litura* (Finland), 4. *Agrochola lychnidis* (Germany), 5. *Agrochola lychnidis* (Cyprus), 6. *Conistra vaccinii* (Finland), 7. *Allophytes oxyacanthae* (Finland), 8. *Allophytes asiatica cyprica* (Cyprus). — 22. Species: 9. *Ammoconia senex* (France), 10. *Ammoconia caecimacula* (Finland), 11. *Ammoconia aholai* (Cyprus), 12. *Polymixis trisignata* (Cyprus), 13. *Polymixis leuconota* (Greece), 14. *Polymixis rufocincta* (Cyprus). Scale 0.1 mm for 21 and 22.



Fig. 23. Eggs of *A. orientalis*. Scale 0.1 mm.

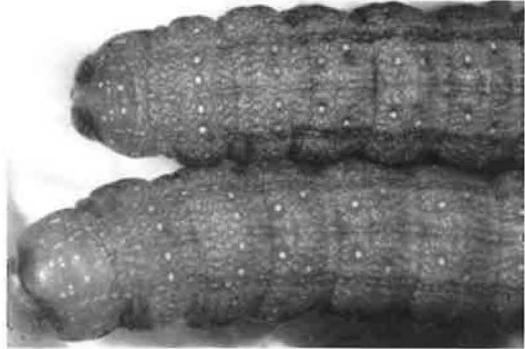


Fig. 25. Thorax and first three abdominal segments of larva of *A. orientalis* in dorsal view. Scale 0.1 mm.

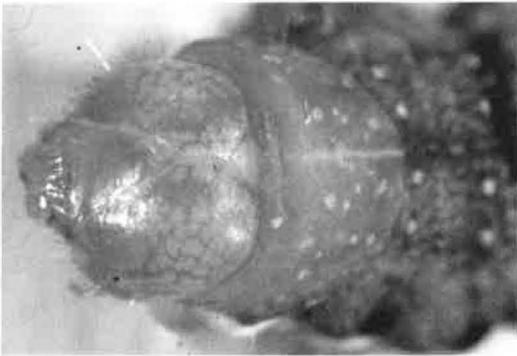


Fig. 27. Head of *A. lychnidis*. Scale 0.1 mm.



Fig. 30. Eggs of *A. aholai*. Scale 0.1 mm.



Fig. 37. Abdominal segments 5–10 of larva of *A. asiatica* in lateral view. Scale 0.1 mm.

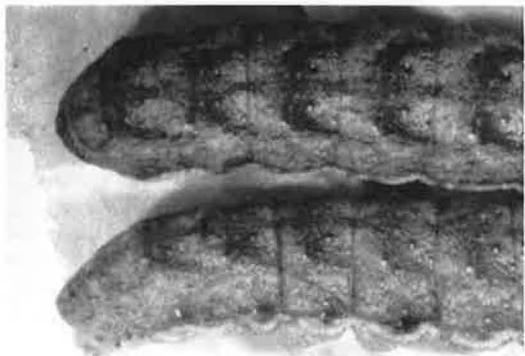


Fig. 40. Abdominal segments 4–10 of brown larva of *P. trisignata* in dorsal view. Scale 0.1 mm.



Fig. 24. Head of larva of *A. orientalis*. Scale 0.1 mm.



Fig. 26. Abdominal segments 4–10 of larva of *A. orientalis* in lateral view. Scale 0.1 mm.



Fig. 28. Green phase of larva of *A. lychnidis* in dorso-lateral view. Scale 0.1 mm.



Fig. 29. Pale brown phase of larva of *A. lychnidis* in lateral view. Scale 0.1 mm.



Fig. 31. Head and prothoracic shield of larva of *A. aholai*. Scale 0.1 mm.



Fig. 32. Larva of *A. aholai* in dorsolateral view (Photo K. Silvonen). Scale 0.1 mm.



Fig. 33. Cremaster of pupa of *A. aholai* in ventral view (Photo K. Silvonon).



Fig. 34. Newly hatched male of *A. aholai* (Photo K. Silvonon). Scale 0.1 mm.



Fig. 35. Head of *A. asiatica*. Scale 0.1 mm.



Fig. 36. Thorax and the first abdominal segment of larva of *A. asiatica* in dorsolateral view. Scale 0.1 mm.



Fig. 38. Head of *P. trisignata*. Scale 0.1 mm.

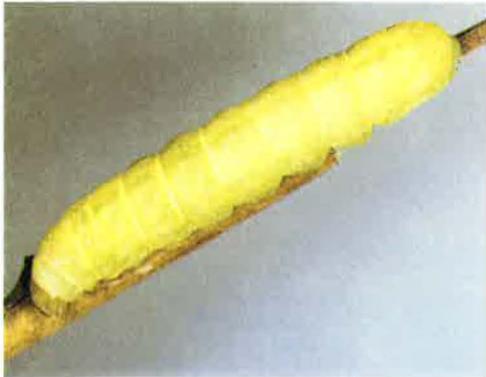


Fig. 39. Green phase of larva of *P. trisignata* in dorsolateral view (Photo K. Silvonon). Scale 0.1 mm.