

New noctuid moths from Cyprus with winter appearance (Lepidoptera, Noctuidae)

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Fibiger, M.: New noctuid moths from Cyprus with winter appearance. (Lepidoptera, Noctuidae).

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Agrochola orientalis sp.n., *Polymixis aphrodite* sp.n., and *Conistra rubricans* sp. n. are described. Colour illustrations of imago specimens and black/white photographs of male and female genitalia are presented of the new species and of related species. A series of *Ammoconia aholai* Fibiger, 1996 is illustrated in colour, and the female genitalia are figured for the first time.

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Introduction

Intensive collecting activity in December and January 1993-94 and 1994-95 by Matti Ahola and Jyrki Lehto, both of Finland has demonstrated that a unique noctuid fauna occurs in Cyprus during the winter months. One species, *Ammoconia aholai* Fibiger, 1996 has already been described (Fibiger, 1996), and the present paper describes an additional 3 new species. The majority of the moths were taken on sugar baits. Three of the four species have been bred. A paper with descriptions of the early stages of these and of other species with hitherto unknown preimaginal stages is planned (M. Ahola, pers. comm.). Included is also material collected in the autumn of 1995 and 1996 and the spring of 1996.

Material

Agrochola orientalis sp.n.

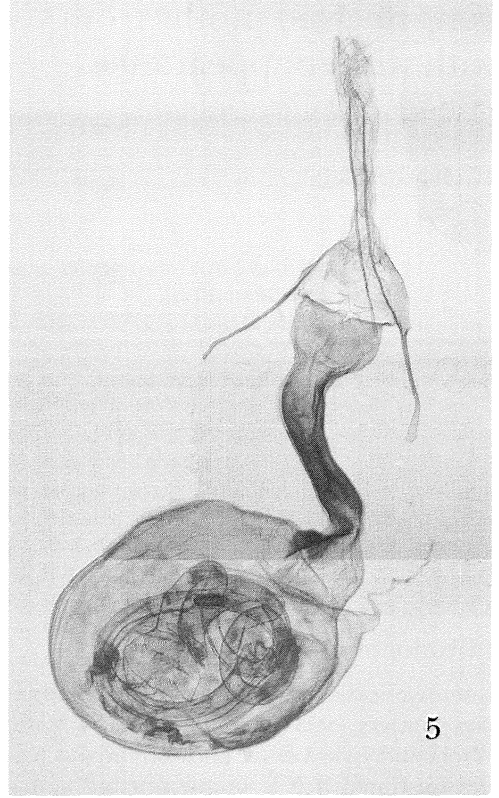
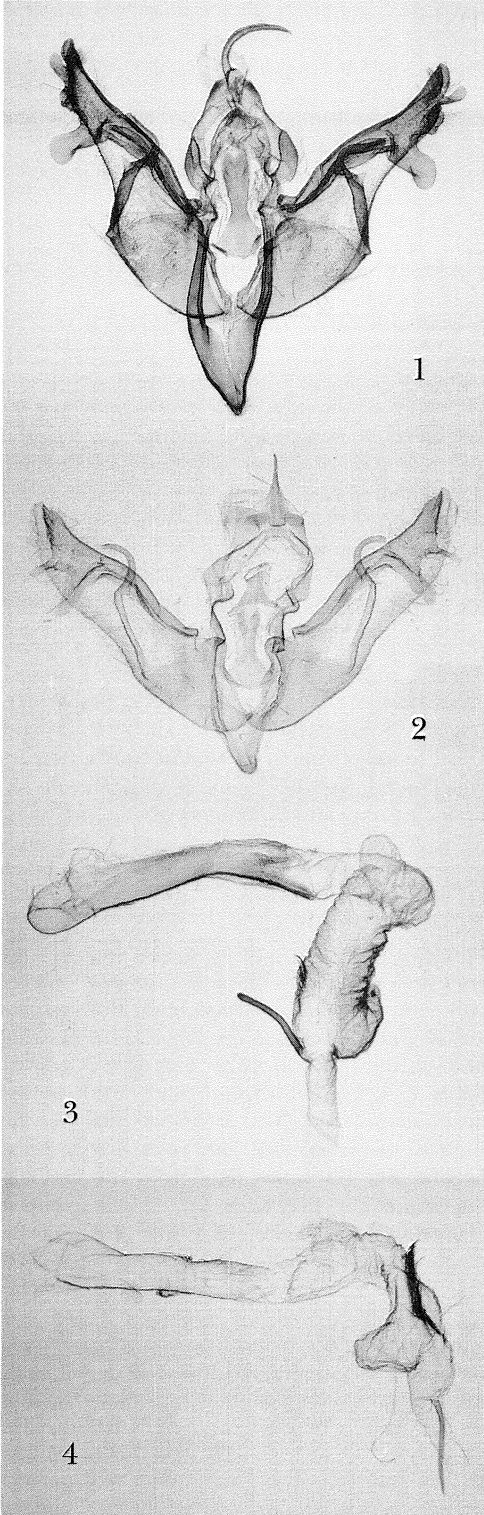
Holotype: male (plate 1: 1), **Cyprus-North**, K.K.T.C., Kantara, 700m, 29.xii.1993-1.i.1994 (leg. M. Ahola), genit. prep. 2288 (in coll. M. Fibiger).

Paratypes: female (allotype; plate 1: 2) with the same data, but genit. prep. 2436; 1 male and 1 female with same data, but in colls M. Ahola

and J. Lehto; 2 males and 1 female, **Cyprus-North**, Yedidalga, north hills of Troodos, 23.xii.1994; 2 males, **Cyprus-North**, Besparmak Daglari, Bufavento, 600m, 24.xii.1994; 1 male and 1 female (plate 1: 3), **Cyprus-North**, Besparmak Daglari, Akcicek, 700m, 21.xii.1994, colls M. Ahola, J. Lehto and M. Fibiger.

Description

Wingspan: male 31-32 mm; female 34-35 mm. Antenna of male ciliate; of female filiform. All recorded specimens fall into two superficially very distinct colour forms, both with weakly marked crosslines and stigmata: a form with blackish brown head, thorax and ground colour (plate 1: 1, 2); and a form with reddish brown head, thorax and ground colour (plate 1: 3). Both forms have a blackish costal streak from basal area to the subterminal line. The streak is interrupted by five more or less conspicuous black dots positioned on each side of the hardly visible antemedian and postmedian lines, and one in the middle, by the medial shade. The black double crosslines are slightly jagged and only visible in the blackish brown form. In this form the reniform stigma is most often visible; in the reddish brown form only the lower half of the reniform is blackish, sometimes whitish outlined. The terminal area of the blackish brown form is light greyish; in the reddish brown form this area is concolorous with the ground colour.



Figs 1,3. Male genital armature and aedeagus with everted vesica of *Agrochola orientalis* sp.n.
 Figs 2,4. Male genital armature and aedeagus with everted vesica of *A. meridionalis* (Staudinger).
 Fig. 5. Female genitalia of *A. orientalis* sp.n.

The fringes of both forms are purplish grey. Hindwings of both forms are unicolorous blackish grey. Underside blackish grey, though lighter; postmedian line and discal spot weakly marked on the hindwing.

Some forms of the highly variable *A. lychnitis* ([Denis & Schiffermüller], 1775) are difficult to separate superficially from the blackish brown form of *A. orientalis*; however, the blackish costal streak is only present in *A. orientalis*.

Male genitalia: valve (fig. 1) tapering basally from clavus outwards. Costa heavily sclerotised, apically enlarged, with three processes ventrally. Saccus long, conspicuous. Clasper prominent, bent 90° subbasally. Juxta long and narrow, constricted medially. Uncus narrow, pointed at apex. Aedeagus (fig. 3) long and narrow; the

ventral carina with small spines, spatulate by apex. Laterally on both sides small pointed spinefields. The everted vesica projects subbasally to ventral side after a narrow twist to the right. Two diverticula present: one subbasal, rounded, and one apical, pointed. Opposite the latter a narrow spineband, where the longest spines are one third as long as width of the vesica. By ductus ejaculatorius is the base of a long, narrow, finger-like cornutus, rounded at apex.

Female genitalia (fig. 5). Like the other species of the group *A. orientalis* has very long posterior apophyses, a heavily sclerotised ductus bursa, a globular corpus bursae, a globular appendix bursa with round sclerotised plate, and three short signa, each with many tiny spines.

Remarks

The sister species, *A. meridionalis* (Staudinger, 1871) has a western distribution. It has only two apical processes ventrally on costa (fig. 2), a medially bent clasper, and a much smaller saccus and uncus.

Aedeagus of *A. meridionalis* (fig. 4) is shorter,

and has an unspined carina. The everted vesica also has two membranous diverticula, positioned almost as those of *A. orientalis*, but the subbasal one is pointed, and the apical one rounded; the spines of the narrow spineband are longer than the width of the vesica; and the long apical cornutus is tapered, and pointed at apex.

The female genitalia of *A. meridionalis* are like those of the other species of the group. They differ in the following characters: the smaller ovipositor valves; the broader ventral plate in ostium bursa; the longer ostium bursa; the ventral sclerotised plate is only two thirds of the dorsal sclerotised plate; and the roundish sclerotisation of the appendix bursa is smaller.

Bionomics

The habitat of *A. orientalis* is the maki zone with scattered bushes and trees, mainly oak, pine and cedar, on the southern mountain slopes of northern Cyprus, the Turkish area (fig. 6). The moths fly in December-January, and are primarily attracted to sugar. The early stages will be described by Ahola.



Fig. 6. Habitat of *A. orientalis* sp. n., *Polymixis aphrodite* sp. n., and *Ammoconia aholai* Fibiger, 1996: Cyprus-North, Besparmak Daghlari, Bufavento. (Photo M. Ahola).

Distribution

A. orientalis is probably endemic to the island of Cyprus. The localities where M. Ahola and J. Lehto recorded it are in the northern coastal mountains north of Gazimagusa and in the same mountain range, but north of Lefkosa.

Etymology

“Orientalis”: eastern; in opposition to *meridionalis*: southern.

Taxonomic discussion

The genus *Agrochola* Hübner, [1821] 1816 is now placed in the tribe Xylenini in the subfamily Hadeninae. It was formerly placed in the subfamily Cuculliinae (*s.l.*), and comprises about 55 species, most of which are Palaearctic and the majority being European / Mediterranean. The arrangement of species in the genus *Agrochola* (and in fact in many of the genera in the former subfamily Cuculliinae) is in urgent need of a revision based on a phylogenetic analysis. In my opinion, many recently described subgenera do not represent monophyletic units; for example the ‘subgenus’ *Ahrolitha* Berio, 1980 comprises a European species, *A. litura* (Linnaeus, 1758), which is closely related to *A. meridionalis* and *A. orientalis*. Berio places *A. meridionalis* in the subgenus *Anchoscelis* Guenée, 1839. The reason for this mistake by Berio is possibly that the description and drawing of the right valve of the male genital armature is incorrect (Berio, 1985): half of the clasper has disappeared and the distal part of the valve, from base of clasper to apex of the valve is not an illustration which is like that of *A. litura*. The arrangement of the subgenera of *Agrochola* in Fibiger & Hacker (1991) also needs revision. Many former mistakes might be due to the fact that a lot of the ‘new subgenera’ are described because of differences at species level in the male genital armature; and that similarities in the everted vesica and in the female genitalia have not been taken sufficiently into consideration.

The species group, or perhaps subgenus, that includes *A. orientalis* and *A. meridionalis* should also contain *A. litura*, *A. sairtana* Derra, 1990, *A. spectabilis* Hacker & Ronkay, 1990, *A. statira* Boursin, 1960, *A. agnorista* Boursin, 1955, *A. hypotaenia* Bytinski-Salz, 1936, *A. rupicapra* Staudinger, 1879, and *A. kindermanni* Fischer von Röslerstamm, [1841].

Polymixis aphrodite sp. n.

Holotype: male, **Cyprus-North**, Yedidalga, North hills of Troodos, 25.xii.1994 (leg. M. Ahola), genit. prep. 2514 (coll. M. Fibiger).

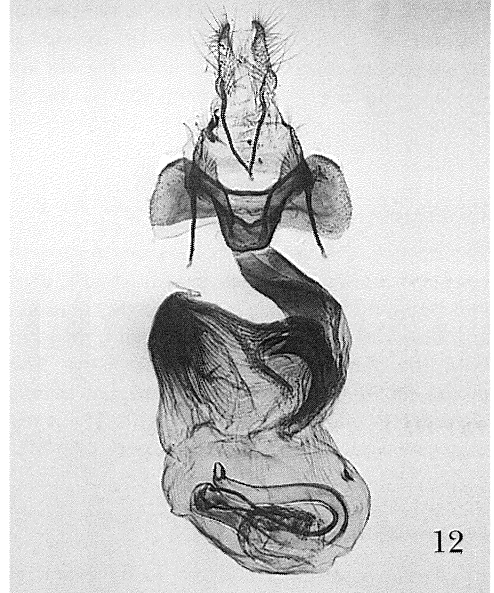
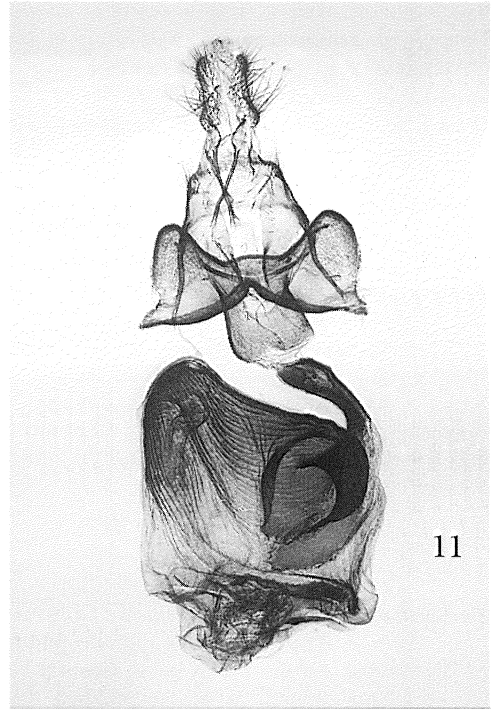
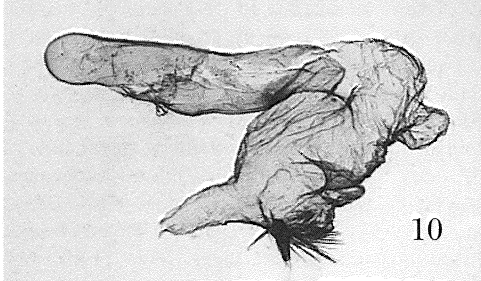
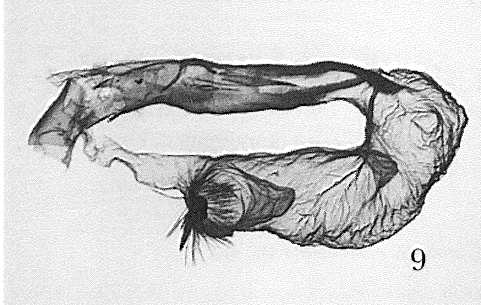
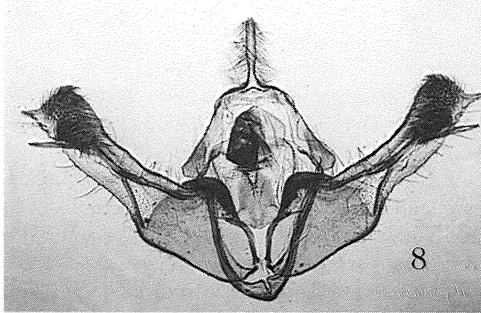
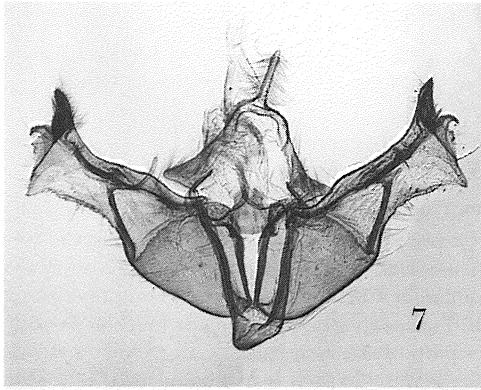
Paratypes: female (allotype, plate 1: 5), **Cyprus-North**, K.K.T.C., Kantara, 700m, 29.xii.1993-1.i.1994 (leg. M. Ahola), genit. prep. 2453 & coll. M. Fibiger; one female, **Cyprus-North**, Besparmak daghleri, Bufavento, 600m, 24.xii.1994, genit. prep. 2448 M. Fibiger, leg. & coll. M. Ahola; one male, **Cyprus-South**, Troodos mts., Olympus, 1950m, 17.x.1996; two males, **Cyprus-South**, Troodos mts., Adelfi above Khandria, 1600m, 20.x.1996 (one male: plate 1: 4) gen. prep. 2664 M. Fibiger (leg. & colls M. Fibiger, D. Nilsson and P. Svendsen).

Description

Wingspan: male 42mm; female 41mm. Antenna of male bipectinate; of female filiform. Head, center of thorax and ground colour of forewing brown; collar, lappet (tegula), abdomen and fringes light brownish. Medial area darkest brown. Prominent basal and median streak. The postmedian line is prominently marked, jagged. The white spot in the reniform stigma round; those of the other species in the group have rectangular white spots. Orbicular stigma oval. Two prominent black wedge-shaped marks present at subterminal line; absent in the other species of the group. Hindwing of male greyish brown; that of female dark brown. Discal spot and terminal line black. Underside light greyish brown. Postmedian line and discal spots present.

P. aphrodite can easily be confused with the sympatrically occurring *P. trisignata* (Ménétries, 1847) (plate 1: 6, 7) and perhaps *P. solieri* (Boisduval, 1840), but both have more quadrangular forewings, the postmedian lines are almost straight (not jagged, though bent), the hindwings of the males are whitish, and the reniform stigmata are oval (in *P. trisignata*) or only a white outer line (in *P. solieri*).

Male genitalia: valve (fig. 7) broadest subbasally. Clavus large, apically rounded, wrinkled, with few small short setae. Costal and ventral margin pointed apically. Digitus positioned medially on cucullus, hook-like; unlike any other in the group. Clasper narrow, small (though much longer than in the other species in the group), finger-like, setose at apex. Tegumen basally pointed, parallel with valve; much more pointed than in any other species in the group. Juxta



Figs 7,9. Male genital armature and aedeagus with everted vesica of *Polymixis aphrodite* sp.n.
Figs 8,10. Male genital armature and aedeagus with everted vesica of *P. trisignata* (Mén.).
Fig. 11. Female genitalia of *P. aphrodite* sp.n.
Fig. 12. Female genitalia of *P. trisignata* (Mén.).

basally almost straight, heavily fused to clavus. Uncus small, pointed at apex.

Aedeagus (fig. 9) long and narrow (much longer than those of the other species of the group), with two long, narrow sclerotised bands from apex of aedeagus to basal part of the vesica. The vesica projects laterally to the right after exit from aedeagus. Three membranous diverticula, and a cluster of long, narrow spines surrounding one prominent spine, present in all the species in the group. Only the size and position of the diverticula differ.

Female genitalia of *P. aphrodite* (fig. 11) differ from those of *P. trisignata* (fig. 12) in the much larger lamella antevaginalis plate; the much longer ventral plate of ostium bursa; the shorter and less sclerotised ductus bursa; and the more sclerotised corpus bursae.

Remarks

The genital armature differs from the sympatrically occurring *P. trisignata* in the ventrally pointed digitus (fig. 8); the clavus being covered by lots of narrow spines; the smaller clasper; the basally narrower tegumen; and the larger uncus.

Compared with *P. trisignata* (fig. 10) the subbasal and the median diverticula of *P. aphrodite* are smaller, and the apical diverticulum is larger, conical.

Bionomics

The habitat of *P. aphrodite* is the maki zone with scattered bushes and trees, mainly of oak, pine and cedar, on the southern and northern mountain slopes of southern and northern Cyprus, in both the Turkish and the Greek areas. The moths fly in October-January, and are mainly attracted to sugar but also to light. The early stages are undescribed (M. Ahola, pers. comm.).

Distribution

P. aphrodite is probably endemic to the island of Cyprus. The localities from which M. Ahola and J. Lehto recorded it are: the northern coastal mountains north of Gazimagusa; the same mountain range, but north of Lefkosa; and in the westernmost region of the Turkish area. P. Svendsen, D. Nilsson and the present author also found it in the Troodos mountains at altitudes of 1600 m to 1950 m.

Etymology

Aphrodite, the Greek goddess of beauty, who was born in the sea-foam on the shore of Cyprus.

Taxonomic discussion

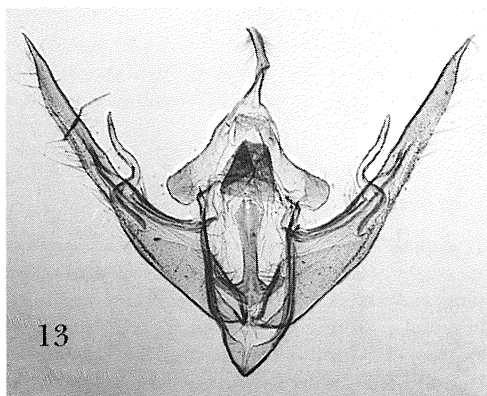
The genus *Polymixis* Hübner, [1820] 1816 is like *Agrochola* placed in the tribe Xylenini in the subfamily Hadeninae. It was formerly placed in the subfamily Cuculliinae (*s.l.*) and comprises about 15 European species and many more in the other parts of the West Palaearctic. As with *Agrochola* the genus *Polymixis* is in urgent need of a revision based on a phylogenetic analysis. In my opinion many of the recently described subgenera do not represent monophyletic units. Therefore the arrangement of 'subgenera' of *Polymixis* in Fibiger & Hacker (1991) also needs revision. Many of the 'new subgenera' described are based on differences in the male genital armature, and similarities in the everted vesica and in the female genitalia have not been taken sufficiently into consideration. Moreover, the 'subgenera' are mainly based on a study of solely European taxa.

The species group which comprises *P. aphrodite* sp. n. also includes *P. stigmatica* (Guenée, 1852), *P. trisignata* (Mén.), *P. deluccai* (Berio, 1976), *P. spinosa* (Chrétien, 1910), and *P. solieri* (Boisduval, 1840), plus an undescribed European species.

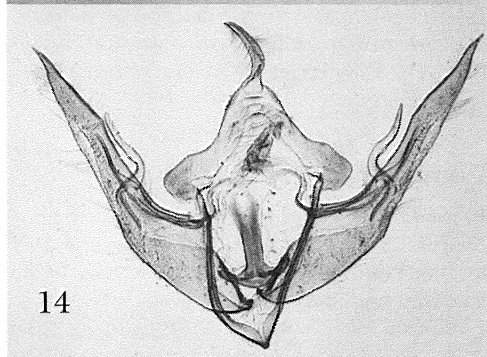
Conistra rubricans sp. n.

Holotype: male, **Cyprus-North**, K.K.T.C., Kantara, 700m, 29.xii.1993-1.i.1994 (leg. M. Ahola), genit. prep. 2286 (coll. M. Fibiger).

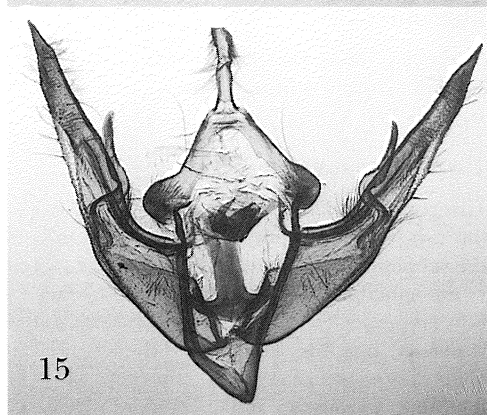
Paratypes: 8 males, 6 females, with the same data, but genit. preps 2517, and 2641; in colls M. Ahola, J. Lehto, and M. Fibiger; 5 males, 6 females, **Cyprus-North**, Yedidalga, north hills of Troodos, 23.xii.1994; 4 males, 6 females, **Cyprus-North**, Besparmak Daglari, Sinan tepe, 600m, 22.xii.1994; 4 males, 3 females, **Cyprus-North**, Besparmak Daglari, Akcicek, 700m, 21.xii.1994, leg. & colls M. Ahola and J. Lehto; 33 males, 31 females, **Cyprus-South**, Troodos mts., Platres, 1100m, 2-6.iv.1996; 3 males, 5 females, **Cyprus-South**, Troodos mts., Moniatas, 800m, 3.iv.1996; 2 males, **Cyprus-South**, Troodos mts., Troodos, 1700m, 4.iv.1996 (leg. P. Svendsen & D. Nilsson), colls. P. Svendsen, D. Nilsson & M. Fibiger.



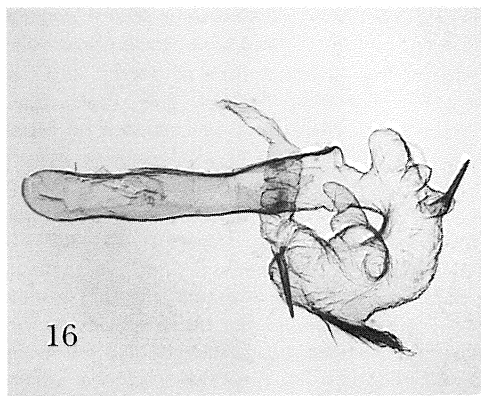
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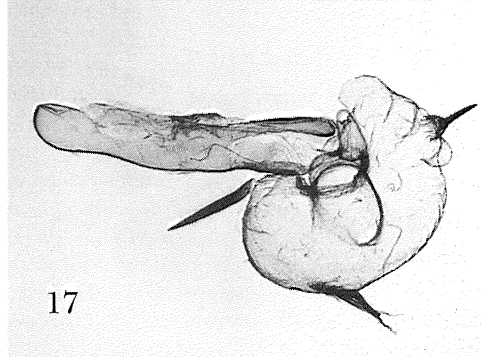
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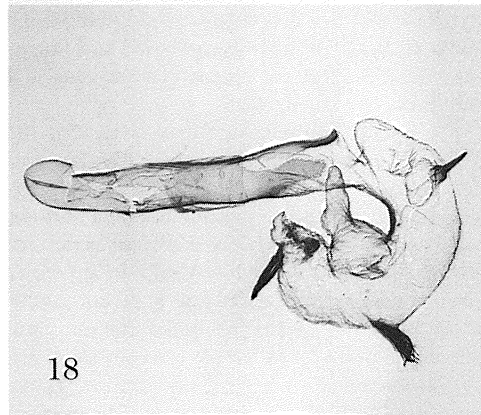
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18

Figs 13,16. Male genital armature and aedeagus with everted vesica of *Conistra rubricans* sp.n.
 Figs 14,17. Male genital armature and aedeagus with everted vesica of *C. veronicae* (Hb.).
 Figs 15,18. Male genital armature and aedeagus with everted vesica of *C. intricata* (Bsd.).

Description

Wingspan: male 29-34mm; female 32-35mm. Antenna of male bipectinate, the length of the lamellae is half the width of the antenna; female antenna filiform. Head, thorax, ground colour and fringes of forewings dark (more or less) reddish brown (plate I: 8-12). Crosslines most often

weakly marked. Apical spot and subterminal line well marked, either light brown or marked by dark brown dots. Median shade often present. Reniform and orbicular stigmata visible, but not strongly marked. Hindwings blackish grey, those of the female slightly darker. Fringes and abdomen light brown. Ground colour of underside

light reddish brown. Forewing underside divided by three colours: costal and subterminal area light reddish brown; ventral area grey; and the area in the middle blackish grey. Postmedian lines present. Discal spot well marked on hindwing.

A male of *C. veronicae* (Hübner, [1813]) and a male of *C. intricata* (Boisduval, 1829) are illustrated for comparison (plate 1: 13 and 14, respectively).

Male genitalia: the armature (fig. 13) resembles the armatures of the other species of the subgenus *Conistra*, but differs by the following characters: the valve, the clasper and the anker-shaped juxta are narrower than in the other species.

The aedeagus of all three species (figs 16-18) with a small, short apical spine. The everted vesicae of almost all species in the subgenus *Conistra* are very similar; they curve through 360°, but vary specifically from each other. After exit from aedeagus the everted vesica is strongly invaginated before a subbasal, lateral, membranous diverticulum. Close to this are ventrally two small membranous diverticula. Opposite the distal one is dorsally a spine-like, narrow cornutus. Medially is a short narrow bunch of thread-like cornuti. Opposite this are two membranous diverticula: one is conical, the other broad-based and finger-like towards apex. By ductus ejaculatorius is a long spine-like cornutus.

The female genitalia of *C. rubricans* (fig. 19) show differences from *C. veronicae* (fig. 20) and *C. intricata* in the following characters: the sclerotised ventral plate of ostium bursa is shorter, narrower, and anteriorly twice as wide as posteriorly; the sclerotised pouch ventrally on appendix bursa is smaller; corpus bursae is round (those of the other two species are oval); and the number of signa spots is different: ventrally there are two spots, laterally on right side are two spots, and dorsally there are three spots (those of *C. veronicae* have on the same places: three, two, and two, respectively; and those of *C. intricata* have three, two, and three).

Remarks

In the male genital armature *C. rubricans* is similar to the two species, *C. veronicae* (fig. 14) and *C. intricata* (fig. 15), and most to the former. The uncus of the latter is one third as long as those of the two others.

In the everted vesica *C. rubricans* (fig. 16) is similar to *C. veronicae* (fig. 17) and *C. intricata*

(fig. 18). The subbasal cornutus is shortest in *C. intricata*; longest in *C. rubricans*. The apical cornutus is longest in *C. veronicae*, shortest in *C. rubricans*. The finger-like diverticulum is smallest in *C. rubricans*.

Bionomics

The habitat of *C. rubricans* is the maki zone with scattered bushes and trees, mainly of oak, elder, pine and cedar, on the southern and northern mountain slopes of northern and southern Cyprus, in both the Turkish and the Greek area (fig. 6). The moths fly through the winter from December-January to the beginning of April, and are mainly attracted to sugar but also to light. The early stages will be described by Ahola (pers. comm.).

Distribution

C. rubricans is probably endemic to the island of Cyprus. The species is widespread in mountain localities on both north and south sides of the East-West politically divided Cyprus.

Etymology

"*Rubricans*" from the Latin "*rubrica*", red earth, from the ground colour.

Taxonomic discussion

The genus *Conistra* Hübner, [1821] 1816 is like the two former genera in the tribe Xylenini of the subfamily Hadeninae. It was formerly placed in the subfamily Cuculliinae (*s.l.*), comprises 14 European species (Fibiger & Hacker, 1991), and is divided into five subgenera (Hreblay, 1992). Many more species occur in the other parts of the West Palaearctic; in Turkey alone there are five additional species. The species of the genus *Conistra* is also in urgent need of a revision based on a phylogenetic analysis. In my opinion many of the old and newly described subgenera do not represent monophyletic units.

The *veronicae* species group which includes *C. rubricans*, has recently been treated by Berio (1983, 1985), Hacker (1990), and Hreblay (1992). The latter author deals with 15 West Palaearctic species of the subgenus *Conistra* with illustrations of male and female genitalia, including aedeagi with everted vesica.

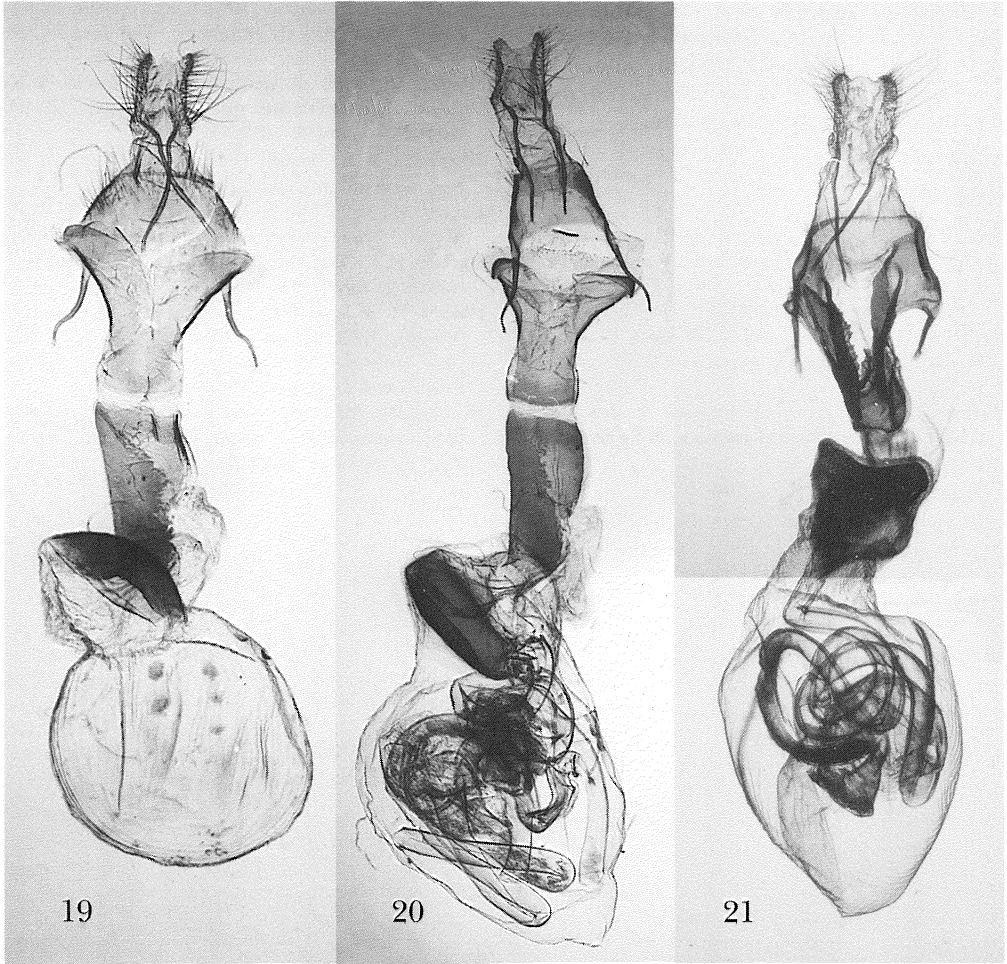


Fig. 19. Female genitalia of *Conistra rubricans* sp.n.
 Fig. 20. Female genitalia of *C. vernicae* (Hb.).
 Fig. 21. Female genitalia of *Ammoconia aholai* Fibiger.

***Ammoconia aholai* Fibiger, 1996**

This species has already been illustrated by Fibiger (1996), but the specimens were not fresh, so here is a photo-series of this beautiful species. The series also shows the span of variability (plate I: 15-20).

As the female was unknown by the time of the original description, the female genitalia are also illustrated (fig. 21). The shape and sclerotisation of ductus bursa and the corpus bursae are unique for the genus.

Ammoconia aholai is abundant on Cyprus and it is therefore astonishing that it has not been

described earlier. One old specimen was found in The Natural History Museum, London by L. Ronkay (pers. comm.): male, Cyprus, Limassol, October 1933, leg. Mavromoustakis, coll. Rothschild.

Acknowledgements

I sincerely thank Matti Ahola and Jyrki Lehto, Finland for the Noctuidae material and the permission to describe the new species. Mariann Fibiger are thanked for checking the English language; Martin Honey, The Natural History Museum, London for helpful corrections and

discussions; Don Lafontaine, Agriculture Canada, Ottawa for genital preparation of a male *P. aphrodite*, and L. Ronkay, Hungarian Natural History Museum, Budapest for information about the specimen of *A. aholai* in London.

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PLATE I

Figs 1-3. *Agrochola orientalis* sp.n. – 1: holotype, male, Cyprus, Kantara; 2: paratype, female, Cyprus, Kantara; 3: paratype, female, Cyprus, Besparmak.

Figs 4,5. *Polymixis aphrodite* sp.n. – 4: paratype, male, Cyprus, Troodos mts.; 5: paratype, female, Cyprus, Kantara.

Figs 6,7. *Polymixis trisignata* (Mén.). – 6: male, Cyprus, Troodos mts.; 7: female, Cyprus, Troodos mts.

Figs 8-12. *Conistra rubricans* sp.n. – 8: male, paratype, Cyprus, Kantara; 9: paratype, male, Cyprus, Kantara; 10: paratype, female, Cyprus, Kantara; 11: paratype, female, Cyprus, Kantara; 12: paratype, male, Cyprus, Kantara.

Fig. 13. *Conistra veronicae* (Hb.), male, Slovakia.

Fig. 14. *Conistra intricata* (Bsd.), France.

Figs 15-20. *Ammoconia aholai* Fibiger, 15-19: males; 20: female, Cyprus, Troodos mts.

