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Notes on the life history of two *Sarbanissa* species (Lepidoptera: Noctuidae, Agaristinae) on the Malayan Peninsula

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Abstract: We report on the life history of *Sarbanissa transiens* (WALKER, 1856). The results of a change of the larval host-plant (*Cayratia mollissima*, Vitaceae) to five other plant species of the same family are presented and the resulting effects on mortality, growth and development of the larvae are discussed. Furthermore we describe the larvae of *S. catacoloides* (WALKER, 1862) and give some information on their parasitoids (Hymenoptera: Braconidae). Our present knowledge on the host-plant specifity of Agaristinae larvae is reviewed. More species live on Vitaceae than on other plant families.

Beobachtungen zur Biologie zweier *Sarbanissa*-Arten (Lepidoptera: Noctuidae, Agaristinae) auf der Malayischen Halbinsel

Zusammenfassung: Im folgenden Artikel werden Angaben zur Larvalbiologie von *Sarbanissa transiens* (WALKER, 1856) (Abb. 1, 2) gegeben. 71 Raupen des vorletzten Larvalstadiums wurden am 17. VI. 1993 auf den Blattunterseiten von *Cayratia mollissima* (Vitaceae) gefunden (Abb. 3). Der Fundort lag etwa 30 km nordöstlich von Kuala Lumpur (Straßenrandvegetation, ca. 200 m NN, alter Sekundärwald des Typs „lowland dipterocarp forest"). Die schwarzen Raupen waren 20 mm lang und weiß behaart. Sie zeigten dorsal und lateral feine Längsstreifen. Bei Zwangsumstellungen auf andere Vitaceen-Arten (*Cayratia japonica, Cissus repens, Leea aequata, L. indica* und *Tetrastigma pedunculare*) wurden hinsichtlich Akzeptanz der neuen Futterpflanzen, Wachstum der Raupen, Dauer der letzten Larvalstadien und Mortalität Unterschiede zu der mit *C. mollissima* weitergefütterten Kontrollgruppe festgestellt. Alle angebotenen Futterpflanzen wurden von den Raupen nach spätestens 2 Fastentagen angenommen (Tab. 1). Ab dem 3. Haltungstag (20. VI.) setzte nach anfänglich guter Futterverträglichkeit eine erhöhte Mortalität ein (Tab. 2). Alle mit *Cissus repens, Leea aequata* und *Tetrastigma pedunculare* gefütterten Tiere starben nach spätestens 5 Tagen (22. VI.). Als letzte ging eine Raupe der mit *Cayratia japonica* gefütterten Gruppe am 9. Tag (26. VI.) ein. Außer von der Kontrollgruppe (6 Puppen) erreichten nur zwei der mit *Leea indica* (Abb.

8) gefütterten Raupen das Puppenstadium. Die auf andere Futterpflanzen umgestellten Raupen wuchsen langsamer, häuteten sich 1 bis 3 Tage später und benötigten für das letzte Larvalstadium 1 Tag länger als die Kontrollgruppe. Keine Unterschiede zeigten sich dagegen in der Dauer des Präpuppenstadiums (1-2 Tage) und der Puppenruhe (15-17 Tage) sowie der Größe der Puppen (16 mm) und der Imagines (Vfll. 17-18 mm). Vermutlich 9 der mit *C. mollissima* gefütterten Raupen waren parasitiert (Tab. 2). Die genaue Zahl der Parasitierungen war infolge der Beweglichkeit der Raupen nach dem Schlupf der Braconiden nicht eindeutig festzustellen.

Eine am 10. VII. 1993 an der Unterseite eines Blattes von *Tetrastigma pedunculare* (Vitaceae, Abb. 9) in der Straßenrandvegegetation gefundene Raupe von *Sarbanissa catacoloides* (WALKER, 1862) war 45 mm lang und eng schwarz-gelb geringelt. Zumindest die adulten Raupen scheinen – im Unterschied zu *S. transiens* – einzellebend zu sein. Die Präpuppenzeit betrug 3 Tage, die Puppenruhe 14 Tage. Im Unterschied zu den rotbraunen Puppen von *S. transiens* war diese Puppe dunkelbraun, maß aber ebenfalls 16 mm. Eine möglicherweise zur gleichen Art gehörende Ansammlung von 9 Raupen eines frühen Larvalstadiums wurde am 27. VII. auf einem weiteren Exemplar von *T. pedunculare* gefunden (Abb. 6). Sie konnten nicht durchgezüchtet werden.

Introduction

There are 23 currently recognized species within the genus *Sarbanissa* WALKER, 1865, all of them occuring in the eastern Palaearctic and Oriental Regions. *Sarbanissa* belongs to the subfamily Agaristinae, which is assumed to belong to the Noctuidae. The Agaristinae are probably of monophyletic origin. The male vesica (RAWLINS 1992) and female ductus bursae (SPEIDEL & NAUMANN, in press) are highly modified and provide, together with the special tympanal organ, good autapomorphies of the subfamily. The Agaristinae include about 450 species, predominantly distributed in the tropics: Old World about 321 species, New World about 128 species (KIRIAKOFF 1977 a-c, updated); Southern Africa: about 50 species (PINHEY 1979); Madagascar: 37 species (VIETTE 1990); Nepal, Godavari area: 8 species (SUGI 1993); Borneo: 14 species (HOLLOWAY 1989); Sumatra: 16 species (KOBES 1985, 1992); Japan: 6 species (SUGI 1987); Australia: 40 species (COMMON 1990).

Life history

Study area: Field-work was conducted in the vicinity of the Ulu Gombak Field Studies Centre of the University of Malaya, 30 km north-east of

Kuala Lumpur. The area is situated at about 200 m above sea-level and is comprised of old secondary lowland dipterocarp forest along a small road from Kuala Lumpur to the Genting highlands (MEDWAY 1966). The plants along the roadsides, mainly those of the family Vitaceae, were checked regularly during 5 months of field-work in 1993. In June and July numbers of larvae, later identified as *Sarbanissa* spp., were found on two different host-plants (*Cayratia mollissima*, Fig. 7, and *Tetrastigma pedunculare*, Fig. 9).

Observations in the field: At about noon on 17. VI. 1993 71 larvae of *S. transiens* were found feeding gregariously on the underside of a compound leaf of *Cayratia mollissima*. The larvae were black, with longitudinal white lines and moderately long white hairs on the body and measured about 20 mm (Fig. 3). When disturbed (e.g., touched with the finger or a forceps) they regurgitated a greenish slimy liquid (contents of the gut).

On 10. VII. 1993 a 45 mm long, black larva with yellow transverse stripes was found feeding on the underside of a leaf of *Tetrastigma pedunculare*. It was successfully reared through to the adult moth which was later identified as *S. catacoloides*. Two other leaves were nearly completely eaten in the vicinity of this larva. This larva also regurgited a greenish slimy liquid when taken from the leaf. Unfortunately the larva was not documented by a photograph.

Two weeks later (27. VII.) 9 small larvae (< 10 mm) were found on another plant of *T. pedunculare*. These produced yellow larvae with black transverse stripes after moulting on 30. VII. (Fig. 6). Unfortunately none of these larvae could be reared and we are not absolutely sure that they are really conspecific with the larva of the reared specimen. However it is possible that they represent early instars of *S. catacoloides*.

Rearing notes: All larvae were kept in closed plastic containers, the bottom of which was covered with filter paper. The containers were cleaned every day, the tissue replaced and the larvae provided with fresh cut leaves. The largest proportion (n = 18) of the 71 larvae was fed with the original host-plant to make sure that at least some of them would survive. The remaining individuals were kept in groups of 10 to 11 specimens and were fed with leaves of different plant species of the grape-vine family (Tab. 2), but only one foodplant was made available for each group.

The host-plants: All host-plants belong to the grape-vine family, which nowadays is usually named Vitaceae (CORNER 1988, LATIFF 1983). Different scientific names have been used in the past for this family and opinions about the systematic status of *Leea* spp. varied considerably between authors. RIDLEY (1922) called the grape-vine family Ampelidaceae in which he included *Leea* as a genus. WILLIS (1966) included *Leea* in a separate family with a single genus, and summarized the remaining genera as Vitidaceae. Both family names are no longer valid but some authors add the former name Ampelidaceae in brackets to avoid misunderstanding (i.e. KENG 1983). Today botanists regard *Leea* spp. as members of the Vitaceae, because "the very characteristic structure of the seed in *Leea* and *Vitis* does not support the separation" (CORNER 1988: 757; but see BRUMMITT 1992).

In the Malay Peninsula the grape-vine family comprises several genera (i.e., *Ampelocissus, Ampelopsis, Cayratia, Cissus, Leea, Tetrastigma*) with about 60 species. There are still some problems concerning the systematics but a revision of the family is in progress (LATIFF, pers. comm. 1994).

Material: The bred specimens, the pupae and some of the larvae (in 70 % alcohol) are preserved in the collection of the second author.

Tests and results

Sarbanissa transiens

Identification: Several imagines were reared (Figs. 1, 2). The genitalia of a male were dissected and proved to be identical with those figured by SUGI (1993) and HOLLOWAY (1989).

Change of foodplants: All larvae immediately accepted *Cayratia japonica, Leea aequata, L. indica* and *Tetrastigma pedunculare,* but only accepted *Cissus repens* after two days (Tab. 1). However, from the third day onwards, there were significant differences in growth, mortality rate and length of larval period between the groups fed with the alternative foodplants and the group fed with the original foodplant *Cayratia mollissima* (= control group).

Preimaginal mortality: In the control group 6 larvae out of 18 managed to pupate. 9 larvae probably were parasitized by Hymenoptera (Braconidae), and the reason for the death of 3 larvae was not obvious. Only 2 larvae out of 11 fed with *Leea indica* reached the prepupal stage and

finally pupated. The mortality of larvae fed with *Cayratia japonica*, *Cissus repens*, *Leea aequata* and *Tetrastigma pedunculare* was 100 percent but the caterpillars survived for different periods: those fed with *C. repens*, *L. aequata* and *T. pedunculare* died within 5 days (22. VI.), while the last larva fed with *C. japonica* survived until 26. VI.

Tab. 1: Acceptance of alternative foodplants (above) and growth of last instar (below) of *Sarbanissa transiens*. The number of larval instars in Agaristinae moths is assumed to be 5, but DYAR (1895 a, b) and LEMBERT (1894) report 6 instars in *Alypia langtoni, A. mariposa* and *A. octomaculata*. — "Yes"/"No" = larvae fed/did not feed on the plant mentioned above; PU = penultimate instar; U = ultimate (last) instar.

Tab. 1: Akzeptanz der Futterpflanzen (obere Reihe) und Länge der Raupen (untere Reihe) bei *Sarbanissa transiens*. Bei den Agaristinae kommen üblicherweise 5 Larvalstadien vor, doch DYAR (1895 a, b) und LEMBERT (1894) erwähnen 6 Stadien für *Alypia langtoni, A. mariposa* and *A. octomaculata*. — „Yes"/„No" = Raupen fressen/fressen nicht die obengenannten Futterpflanzen; PU = vorletztes Larvalstadium; U = letztes Larvalstadium.

Date [1993]	Control group *Cayratia mollissima*	*Cayratia japonica*	*Cissus repens*	*Tetrastigma pedunculare*	*Leea indica*	*Leea aequata*
17. VI.	yes, PU: 20 mm	yes, PU: 20 mm	no, PU: 20 mm	yes, PU: 20 mm	yes, PU: 20 mm	yes, PU: 20 mm
18. VI.	yes	yes	no	yes	yes	yes
19. VI.	yes	yes	yes	yes	yes	yes
20. VI.	yes, U: 25–30 mm	yes, PU/U: 20–22 mm	yes, PU: 17–20 mm	yes, PU: 19–22 mm	yes, PU: 20–25 mm	yes, PU: 18–21 mm
21. VI.	yes, U: 25–30 mm	yes, PU/U: 20–25 mm	?yes, PU: 17–20 mm	yes, PU: 21–22 mm	yes, PU: 20 mm	yes, PU: 15–20 mm
22. VI.	yes	yes	all dead	all dead	yes	all dead
23. VI.	yes, U: 30 mm	yes	†	†	yes	†
24. VI.	yes, U/prepupae	yes	†	†	yes	†
25. VI.	prepupae, pupae 16 mm	yes	†	†	yes	†
26. VI.	pupae	all dead	†	†	yes	†
27. VI.	pupae	†	†	†	yes, U: 30 mm	†
28. VI.	pupae	†	†	†	yes, U/prepupae	†
29. VI.	pupae	†	†	†	prepupae	†
30. VI.	pupae	†	†	†	pupae, 16 mm	†

Moulting: The final instar was only reached by larvae fed with *Cayratia japonica*, *C. mollissima* and *Leea indica*. On 19. VI. all 18 individuals of the control group had moulted. The larvae fed with *C. japonica* moulted on 20. VI. and 21. VI. respectively and the 2 remaining individuals of the group fed with *Leea indica* moulted on 22. VI. Therefore moulting was slowed down for 1 to 2 days (*C. japonica*) or 3 days (*L. indica*) compared to the control group.

Growth rate of the final instar: The acceptance of alternative foodplants was indicated by the fact that the leaves were eaten and faeces were found in the plastic containers. The larvae seemed to have problems digesting the leaves as indicated by their growth rate. Larvae fed with *C. mollissima* reached a body length of 25–30 mm one day after moulting into the final instar. Pupation occured when the larva was 30 mm long. This bodylength was only reached by 2 larvae fed with *Leea indica* on 26. VI. when the control group had already pupated (Tab. 2). The larvae fed with *Cayratia japonica*, *Cissus repens*, *Leea aequata* and *Tetrastigma pedunculare* never reached more than 25 mm in length (Tab. 1).

Duration of the last instar and pupation: In the control group the final instar lasted 5 days (N = 6), and the prepupal stage between 1 (N = 4) and 2 (N = 2) days. The imagines hatched between 10. VI. and 12. VI. after a period of 15 (N = 2), 16 (N = 1) or 17 (N = 2) days. One pupa died and

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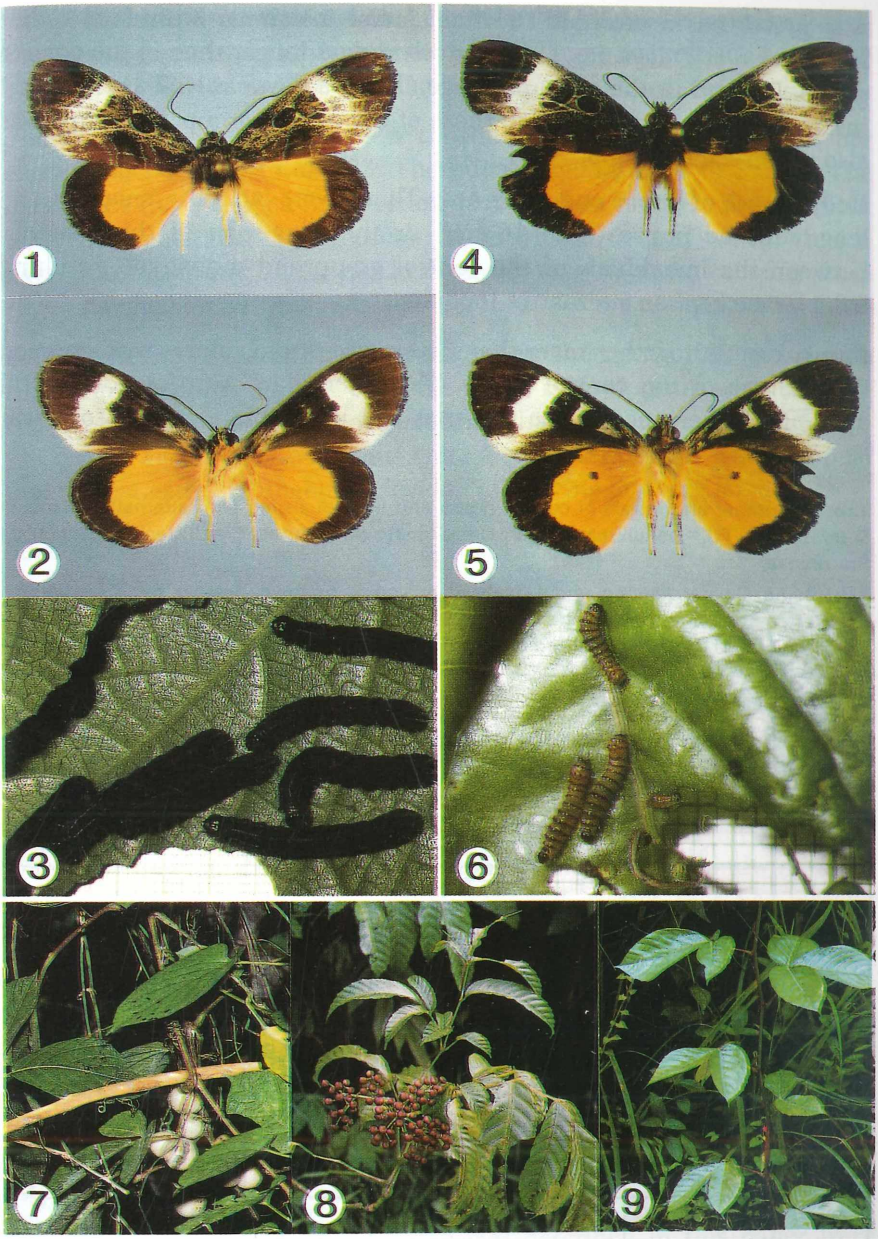
Colour plate:

Fig. 1: *Sarbanissa transiens* (male, dissected), dorsal view; fore wing length 17 mm. **Fig. 2:** *S. transiens*, ventral view (same specimen as in Fig. 1). **Fig. 3:** Larvae of *S. transiens*, penultimate instar, feeding on *Cayratia mollissima* (Photo: 17. VI. 1993). **Fig. 4:** *Sarbanissa catacoloides* (male, dissected), dorsal view. Note similarity to *S. transiens;* fore wing length 18 mm. **Fig. 5:** *S. catacoloides*, ventral view. Note black discal spot on the under surface of the hindwing. **Fig. 6:** Probable early instars of *S. catacoloides*, feeding on *Tetrastigma pedunculare* (Photo: 29. VII. 1993). **Fig. 7–9:** Mentioned species of Vitaceae, on which *Sarbanissa* spp. were reared successfully: *Cayratia mollissima* (Fig. 7), *Leea indica* (Fig. 8), *Tetrastigma pedunculare* (Fig. 9).

Abb. 1: *Sarbanissa transiens* (männliches Tier, nach Genitalpräparation), Oberseite. Vorderflügellänge 17 mm. **Abb. 2:** Das gleiche Individuum wie Abb. 1 in Ansicht von unten. **Abb. 3:** Raupen des vorletzten Larvalstadiums von *S. transiens* fressen an der Fundpflanze *Cayratia mollissima* (Foto: 17. VI. 1993). **Abb. 4:** *Sarbanissa catacoloides* (männliches Tier, nach Genitalpräparation), Vorderflügellänge 18 mm. In der Dorsalansicht besteht große Ähnlichkeit zu *S. transiens*. **Abb. 5:** *S. catacoloides*, Unterseite. Auffälligstes Unterscheidungsmerkmal zu *S. transiens* ist ein schwarzer Punkt auf der Unterseite der Hinterflügel. **Abb. 6:** Möglicherweise junge Raupen von *S. catacoloides*, die an Blättern von *Tetrastigma pedunculare* gefunden wurden (Foto: 29. VII. 1993). **Abb. 7–9:** Im Text erwähnte Arten der Vitaceen, an denen Raupen von *Sarbanissa* spp. erfolgreich gezüchtet werden konnten: *Cayratia mollissima* (Abb. 7), *Leea indica* (Abb. 8), *Tetrastigma pedunculare* (Abb. 9).



was preserved in alcohol. The final larval instar fed with *Leea indica* lasted for 6 or 7 days, i.e. 1 respectively 2 days longer than in the control group. In contrast the prepupal stage (1 and 2 days) as well as the pupal instar (15 days) were similar to those of the control group. One pupa was also preserved in alcohol.

Body length of pupae and imagines: There were no differences in the length of the pupae (both 16 mm) or the wing-span of the imagines between the individuals of the control group and individuals resulting from larvae kept on alternative foodplants.

Parasitism: Altogether more than 250 larvae of braconid wasps emerged from larvae of the control group. The caterpillars were obviously still alive after emergance of the parasites and were able to move, so it was

Tab. 2: Number and instars of control group and individuals fed with alternative plants in *S. transiens*. — PU = penultimate instar; U = ultimate (last) instar; * = cluster/s of cocoons of Braconidae.

Tab. 2: Anzahl der Raupen und Larvalstadien von *S. transiens* bei der mit *C. mollissima* gefütterten Kontrollgruppe und der mit anderen Vitaceen gefütterten Tiere. — PU = vorletztes Larvalstadium; U = letztes Larvalstadium; * = Ansammlungen von Kokons von Braconidae.

Date [1993]	Control group *Cayratia mollissima*	*Cayratia japonica*	*Cissus repens*	*Tetrastigma pedunculare*	*Leea indica*	*Leea aequata*
17. VI.	18 PU	10 PU	11 PU	11 PU	11 PU	10 PU
18. VI.	18 PU	10 PU	11 PU	11 PU	11 PU	10 PU
19. VI.	18 U	9 PU	11 PU	11 PU	11 PU	10 PU
20. VI.	18 U	8 PU, 1 U	6 PU	8 PU	6 PU	9 PU
21. VI.	* 15 U	3 PU, 5 U	3 PU	4 PU	3 PU	9 PU
22. VI.	15 U	1 PU, 5 U	all dead	all dead	2 U	all dead
23. VI.	* 13 U	5 U	†	†	2 U	†
24. VI.	7 U, 6 prepupae	1 U	†	†	2 U	†
25. VI.	* 2 prepupae, 4 pupae	1 U	†	†	2 U	†
26. VI.	6 pupae	all dead	†	†	2 U	†
27. VI.	6 pupae	†	†	†	2 U	†
28. VI.	6 pupae	†	†	†	1 U, 1 prepupa	†
29. VI.	6 pupae	†	†	†	2 prepupae	†
30. VI.	6 pupae	†	†	†	2 pupae	†

not possible to determine the exact number of larvae being parasitized. Clusters of cocoons and the number of dead larvae suggested a total of 9 parasitized individuals. 3 larvae died because of unknown reasons.

The braconid larvae spun yellow cocoons. The number of cocoons per cluster was between 15 and 53. The pupal stage lasted 4 to 6 days. The parasitoids that emerged first needed a longer time for their development than those emerging later (cocoons from 21. VI. hatched on 27. VI. = 6 days, cocoons from 23. VI. hatched on 28. VI. = 5 days, cocoons from 25. VI. hatched on 29. VI. = 4 days).

No parasites were reared from larvae kept on alternative foodplants. As a comparatively large number of larvae of the control group were parasitized (9 out of 18) one might have expected that at least some of the 53 larvae fed on alternative foodplants were also parasitized. It would appear that the parasites are unable to develop in starving or dying larvae.

Sarbanissa catacoloides

Identification: The only male specimen bred from the larva found on 10. VII. was dissected (Figs. 4, 5). The genitalia proved to be identical with those of *Sarbanissa catacoloides* as figured by SUGI (1993) and HOLLOWAY (1989). Although there is no clear black discal spot on the upper surface of the hindwing, this spot is clearly present on the under surface (Fig. 5). As the male genitalia agree with those figured in the literature, we assume that the lack of the black discal spot on the upper surface of the hindwing is due to intraspecific variation. The few Himalayan specimens before us show the discal spot of the upper surface of the hindwing more prominently than specimens from Sundaland, a fact that has already been mentioned by SUGI (1993).

For a short diagnosis of the larva see "Observations in the field". The prepupal stage lasted 3 days and the imago hatched after 14 days. The length of the pupa was identical to the pupal length of *S. transiens* (16 mm), but the pupa was clearly different in colour (reddish brown in *S. transiens*, dark brown in *S. catacoloides* as observed 5 to 6 days after pupation).

Discussion

The larvae of the two *Sarbanissa* species described in this paper were found on two species of Vitaceae. It seems possible that the two sympatric species of *Sarbanissa* prefer different larval foodplants as a

result of food competition. It should be noted that the larvae of the two species can easily be separated by phenotype. This is not expected judging from the imagines, which are extremely similar.

It is not possible to give definitive information about the choice of larval host-plants in *S. transiens* because of the short time we kept the caterpillars. Perhaps the high mortality of individuals fed with *Cayratia japonica, Cissus repens, Leea aequata* and *Tetrastigma pedunculare* resulted from the change of the foodplant in the penultimate instar, and younger and hatching caterpillars, respectively, could develop successfully on different species of Vitaceae. Nevertheless, the mortality resulting from foodplants of the same plant genus was remarkable. Caterpillars found on *Cayratia mollissima* and fed with *Cayratia japonica* lived longer then those fed with *Cissus repens, Leea aequata* and *Tetrastigma pedunculare* and 50 % reached the penultimate instar (Tabs. 1, 2). On the other hand caterpillars fed with *Leea indica* reached the final instar, pupated and hatched, while those fed with *Leea aequata* died at a similar rate to those fed with *C. repens* and *T. pedunculare.* These differences are possibly due to different composition of the leaves, and a chemical analysis should be done.

There are descriptions of the life history of *S. "transiens"* by PIEPERS & SNELLEN (1905, as *Zalissa transiens*) and HORSEFIELD & MOORE (1858/9, as *Eusemia transiens*) from Java. These descriptions and figures differ considerably from our larvae. Therefore we suppose that both descriptions refer in fact to *Sarbanissa sundana* HOLLOWAY, 1982 which was recently recognized as being specifically different from *S. transiens* (see HOLLOWAY 1989) and which represents the third species of *Sarbanissa* present in Sundaland. A fourth species of this genus in Sundaland is so far only known from Sumatra: *Sarbanissa sugii* KOBES, 1992. As far as we know there are no further larval descriptions and no data concerning the larval biology of *Sarbanissa* spp. except those mentioned above and the notes on the larvae of the Indian species *Sarbanissa albifascia* (WALKER, 1865) and *S. venosa* (MOORE, 1879) in BELL's unpublished manuscript (BELL, no year).

Most agaristine larvae from all faunal regions feed on Vitaceae (see Tab. 3). The larvae of many species feed on wild and cultivated grape (BARLOW 1982: 84; KITCHING 1984: 226; SUGI 1987: 288; HOLLOWAY 1989: 202 ff.). In Australia *Phalaenoides glycinae* LEWIN, 1805 is even regarded as a pest of cultivated grape, *Vitis vinifera* (HAMPSON 1901: 559, COMMON 1990: 464).

Tab. 3: Known foodplants of Agaristinae. — * = nomenclature following KIRIAKOFF (1977 a–c) and POOLE (1989); ** = following BRUMMITT (1992); specific names in quotation marks indicates that this identification is doubtful.

Tab. 3: Bekannte Futterpflanzen der Agaristinae. — * Nomenklatur nach KIRIAKOFF (1977 a–c) und POOLE (1989); ** = nach BRUMMITT (1992); Fragezeichen deuten auf eine fragliche Bestimmung hin.

Species*	Larval foodplant	Plant family**	Reference
		Oriental region	
Aegocera venulia	*Boerhavia* sp. *Trianthema* sp.	Nyctaginaceae Aizoaceae	GARDNER 1941: 295 GARDNER 1941: 295
Episteme adulatrix	*Dioscorea belophylla*	Dioscoreaceae	GARDNER 1946: 251
Episteme bisma	"Batatas edulis" = *Ipomoea* *Dioscorea* sp. *Dioscorea oppositifolia*	Convolvulaceae Dioscoreaceae Dioscoreaceae	PIEPERS & SNELLEN 1905: 196 PIEPERS & SNELLEN 1905: 196 HORSFIELD & MOORE 1858/9: 288
Episteme vetula	*"Smilax leucophylla(?)"* *Dioscorea* sp.	Liliaceae Dioscoreaceae	PIEPERS & SNELLEN 1905: 195 PIEPERS & SNELLEN 1905: 195
Mimeusemia basalis	*Dillenia* sp.	Dilleniaceae	HORSFIELD & MOORE 1858/9: 290
Mimeus. davidsoni	*Dillenia* sp.	Dilleniaceae	HOLLOWAY 1989: 203
Ophthalmis milete	*Cissus* sp.	Vitaceae	HORSFIELD & MOORE 1858/9: 290
Sarbanissa albifascia	*Dillenia indica* *Leea* sp.	Dilleniaceae Leeaceae (= Vitaceae)	GARDNER 1948: 310 HOLLOWAY 1989: 206
Sarbanissa venosa	*Vitis* sp.	Vitaceae	HOLLOWAY 1989: 206
Sarbanissa "transiens"	*"Cissus(?)"* *Vitis* sp.	Vitaceae Vitaceae	HORSFIELD & MOORE 1858/9: 290 SEVASTOPULO 1942: 421
Scrobigera proxima [as *amatrix*]	*Cissus* sp.	Vitaceae	HORSFIELD & MOORE 1858/9: 289
		Australian region	
Agarista agricola	*Cayratia clematidea* *Cissus* sp. *Vitis vinifera* *Vitis heterophylla*	Vitaceae Vitaceae Vitaceae Vitaceae	COMMON 1990: 464 COMMON 1990: 464 COMMON 1990: 464 HAMPSON 1901: 550
Agyrolepida subaspersa	*Cissus hypoglauca* *Cayratia clematidea* *Parthenocissus* sp. *Vitis vinifera*	Vitaceae Vitaceae Vitaceae Vitaceae	COMMON 1990: 464 COMMON 1990: 464 COMMON 1990: 464 COMMON 1990: 464
Apina callisto	*Trifolium subterraneum* *Arctotheca calendula* *Plantago* sp. *Erodium* sp. *Malva* sp. *Rumex* sp.	Leguminosae (= Fabaceae) Compositae (=Asteraceae) Plantaginaceae Geraniaceae Malvaceae Polygonaceae	COMMON 1990: 463 COMMON 1990: 463 COMMON 1990: 463 COMMON 1990: 463 COMMON 1990: 463 COMMON 1990: 463

Tab. 3: Continued. — **Tab. 3:** Fortsetzung.

Species*	Larval foodplant	Plant family**	Reference
		Australian region (continued)	
Comocrus behri	*Casuarina* sp. *Loranthus pendulus*	Casuarinaceae Loranthaceae	Hampson 1901: 546 Hampson 1901: 546
Cremnophora angasii	*Halgania cyanea*	Boraginaceae	Common 1990: 463
Cruria donowani	*Alocasia macrorhizos* *Hibbertia* sp. *Cissus antarctica* *Boerhavia diffusa*	Araceae Dilleniaceae Vitaceae Nyctaginaceae	Common 1990: 464 Common 1990: 464 Common 1990: 464 Common 1990: 464
Eutrichopidia latinus	*Haloragis teucrioides* *Hibbertia obtusifolia*	Haloragaceae Dilleniaceae	Hampson 1901: 554 Common 1990: 464
Hecatesia fenestrata	*Cassytha* sp.	Lauraceae	Common 1990: 464
Hecatesia thyridion	*Cassytha* sp.	Lauraceae	Common 1990: 464
Hecatesia exultans	*Cassytha* sp.	Lauraceae	Common 1990: 464
Periscepta polysticta	*Hibbertia obtusifolia* *Hibbertia fasciculata*	Dilleniaceae Dilleniaceae	Common 1990: 464 Common 1990: 464
Phalaenoides glycinae	*Cissus* sp. *Vitis vinifera* *Vitis* sp. *Hibbertia* sp. *Oenothera* sp. *Epilobium* sp.	Vitaceae Vitaceae Vitaceae Dilleniaceae Onagraceae Onagraceae	Hampson 1901: 559 Hampson 1901: 559 Hampson 1901: 559 Common 1990: 464 Common 1990: 464 Common 1990: 464
Phalaenoides tristifica	*Epilobium cinereum* *Oenothera* sp.	Onagraceae Onagraceae	Common 1990: 464 Common 1990: 464
		Afrotropical region	
Aegoceropsis fervida	*Rhoicissus cirrhifolia*	Vitaceae	Janse 1937: 33
Agoma trimenii	*Cissus* sp. *Rhoicissus* sp.	Vitaceae Vitaceae	Pinhey 1975: 158 Pinhey 1975: 158
Brephos decora	*Oldenlandia sp.* *Pentanisia sp.* *Anthospermum aethiopicum*	Rubiaceae Rubiaceae Rubiaceae	Pinhey 1975: 157 Pinhey 1975: 157 Dickson 1953: 73 f.
Heraclia africana	*Cissus* sp. *Cissus cirrhosa*	Vitaceae Vitaceae	Pinhey 1975: 157 Janse 1937: 17
Heraclia butleri	*Vitis vinifera* ("grape-vine")	Vitaceae	Pinhey 1975: 157
Heraclia superba	*Cissus* sp. "wild pea" *Vitis vinifera* *Cissus cirrhoa*	Vitaceae Leguminosae (= Fabaceae) Vitaceae Vitaceae	Pinhey 1975: 157 Pinhey 1975: 157 Janse 1937: 17 Janse 1937: 17
Hespagarista echione	*Xanthosoma* sp.	Araceae	Pinhey 1975: 158
Ovios capensis	*Protea* sp.	Proteaceae	Pinhey 1975: 159

Tab. 3: Continued. — **Tab. 3:** Fortsetzung.

Species*	Larval foodplant	Plant family**	Reference
		Neotropical region	
"Aucula" hilzingeri	*Fuchsia* sp.	Onagraceae	Bourquin 1954: 1–2
Aucula franclemonti	*Vitis tiliifolia*	Vitaceae	Rawlins 1992: 298
		Nearctic region	
Xerociris wilsonii	*Cissus trifoliata*	Vitaceae	Crumb 1956: 11
Copidryas cosyra	*"Carnegiea gigantea(?)"*	Cactaceae	Crumb 1956: 12
	Opuntia sp.	Cactaceae	Crumb 1956: 12
Alypia octomaculata	*Vitis* sp.	Vitaceae	Hampson 1901: 638
	Vitis vinifera ("grape")	Vitaceae	Crumb 1956: 13
	Ampelopsis sp.	Vitaceae	Crumb 1956: 13
Alypia ridingsii	*Oenothera bistorta*	Onagraceae	Crumb 1956: 14
	Oenothera dentata	Onagraceae	Crumb 1956: 14
	Eulobus californicus	Onagraceae	Crumb 1956: 14
	Clarkia rhomboidea	Onagraceae	Crumb 1956: 14
Alypia mariposa	*Clarkia elegans*	Onagraceae	Hampson 1901: 640
Alypia langtoni	*Epilobium* spp.	Onagraceae	Crumb 1956: 14
Alypia maccullochi	*Epilobium angustifolium*	Onagraceae	Crumb 1956: 15
Euthisanotia brevipennis	*Epilobium californicum*	Onagraceae	Crumb 1956: 15
	Oenothera spp. ("evening-primrose")	Onagraceae	Crumb 1956: 15
Euthisanotia unio	*Oenothera biennis*	Onagraceae	Crumb 1956: 16
	Ludwigia sp.	Onagraceae	Crumb 1956: 16
	Vitis vinifera ("grape")	Vitaceae	Crumb 1956: 16
	Epilobium sp.	Onagraceae	Hampson 1901: 405
Psychomorpha epimenis	*Vitis vinifera* ("grape")	Vitaceae	Crumb 1956: 15
Parathisanotia grata	*Vitis vinifera* ("grape")	Vitaceae	Saunders 1875: 42
	Ampelopsis sp.	Vitaceae	Hampson 1910: 403
	Ampelopsis quinquefolia	Vitaceae	Saunders 1875: 42 f.
	Humulus sp. ("hop")	Cannabaceae	Saunders 1875: 42 f.
		Palearctic region	
Asteropetes noctuina	Vitaceae	Vitaceae	Sugi 1987: 288
Chelonomorpha japana	*Smilax* sp.	Liliaceae	Sugi 1987: 288
	Smilax herbacea	Liliaceae	Hampson 1920: 536
Maikona jezoensis	Vitaceae	Vitaceae	Sugi 1987: 288
Mimeusemia persimilis	*Cayratia* sp.	Vitaceae	Holloway 1989: 203
Sarbanissa subflava	*Ampelopsis* sp.	Vitaceae	Holloway 1989: 206
	Cayratia sp.	Vitaceae	Holloway 1989: 206
	Parthenocissus sp.	Vitaceae	Holloway 1989: 206
	Vitis sp.	Vitaceae	Holloway 1989: 206
Sarbanissa venusta	Vitaceae	Vitaceae	Sugi 1987: 288

It is highly probable that the choice of Vitaceae as larval foodplants is at least an early invention in the monophyletic subfamily Agaristinae, but Vitaceae are not the exclusive foodplants of the subfamily. The larvae are also found on plants belonging to the following families: Dilleniaceae, Lauraceae, Onagraceae, Haloragaceae, Portulacaceae, Nyctaginaceae, Cactaceae, Loranthaceae, Boraginaceae, Rubiaceae, Araceae, Smilacaceae, Dioscoreaceae (RAWLINS 1992). It is notable that not only dicotyledons but also monocotyledons are contained in this list. However, some authors mention only on which plant they found the larvae and not that they were actually found feeding on those plants. Thus the host-plants cited in literature have to be regarded with caution and breeding experiments with different host-plants need to be undertaken in future.

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