

Falsiplecta integripedia gen. et sp. nov. from Vietnam (Gastropoda, Pulmonata, Helicarionidae)

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ABSTRACT. On the territory of Cat-Tien National Park a new species of land snails has been found. Anatomical study has shown that the new species belongs to a new genus probably distantly related to the genus *Hemiplecta*. Illustrated description is presented.

Introduction

The fauna of terrestrial mollusks of Vietnam has been studied insufficiently and unevenly. The malacofauna is most fully studied in the northernmost (Tonkin) and the southernmost (Cochinchina) regions of Vietnam, predominantly their coastal territories. Cat-Tien National Park is located in Cochinchina at its boundary with Annam (southern part of Vietnam, 11°26'N, 107°21'E), and special investigations of malacofauna in this region have not been conducted until now. In December of 2016 and May of 2018 one of the authors (I.S.) collected material on the territory of the Park; some results of study of this collection are given below.

Material and methods

The material of the new species (seven specimens) was collected in the Cat-Tien National Park (Southern Vietnam) during field survey and fixed in 75% ethanol in an expanded state. Dissections were made by common manual method under stereomicroscope "Olympus SZ". 2 specimens dissected.

Systematic part

Superfamily Helicarionoidea Bourguignat, 1883

Family Helicarionidae Bourguignat, 1883

Subfamily Ariophantinae Godwin-Austen, 1888

Falsiplecta Schileyko et Semenyuk, gen. nov.

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Type species – *Falsiplecta integripedia* sp. nov. (here designated).

Shell *Hemiplecta*-like, rather large (diameter up to 38 mm), depressed, thin, moderately fragile, translucent, with narrow umbilicus.

Sole (when contracted) with numerous transversal grooves; longitudinal grooves are absent. Caudal horn is absent; caudal fossa in form of vertical slit.

Reproductive tract is devoid of any additional organs, except for penial caecum, to which a penial retractor is attached.

Spermatophore consists of elongate thin-walled ampule and very thin, spineless tail thread.

[Раковина похожа на раковину *Hemiplecta*, довольно большая (диаметр до 38 мм), прижатая, тонкостенная, просвечивающая, с узким пупком.

Подощва (у сократившегося животного) с многочисленными поперечными бороздками; продольные борозды отсутствуют. Кaudальный рог отсутствует; кaudальная пора в виде вертикальной щели.

Репродуктивный тракт лишён дополнительный органов, кроме пениального цекума, к вершине которого крепится ретрактор пениса.

Сперматофор состоит из удлинённой тонкостенной ампулы и очень тонкой хвостовой нити, лишённой шипов.

Замечания. Род *Falsiplecta*, вероятно, есть дальний родственник рода *Hemiplecta*; однако, различия между этими двумя родами существенны, именно:

1. Подощва *Falsiplecta*, в противоположность *Hemiplecta*, не трёхраздельная, т.е. лишена продольных борозд.

2. У *Falsiplecta* нет дополнительных органов (в данном случае – саркобелума) на вагине или атриуме, в то время как у *Hemiplecta* имеется хорошо развитый саркобелум.

3. У *Falsiplecta* папилла пениса отсутствует, тогда как у *Hemiplecta* [во всяком случае, у *H. ceylanica* (L.Pfeiffer, 1850)] этот орган имеется].

Remarks. The genus *Falsiplecta* is, perhaps, distantly related to the genus *Hemiplecta*; however, differences between these two genera are rather significant, namely:



FIG. 1. *Falsiplecta integripedia* gen. et sp. nov. Holotype.
 РИС. 1. *Falsiplecta integripedia* gen. et sp. nov. Голотип.

1. Sole in *Falsiplecta*, opposite to *Hemiplecta*, is not tripartite, i.e. deprived of longitudinal grooves.

2. In *Falsiplecta* no any additional organs (in this case – sarcobelum) on vagina or atrium.

3. In *Falsiplecta* penis papilla is absent whereas in *Hemiplecta* [at least, in *Hemiplecta ceylanica* (L. Pfeiffer, 1850) this papilla is present].

Distribution. The single species of this genus is known only from the type locality: southern Vietnam, Cat Tien National Park.

Etymology. The name is a combination of “fals(us)”, i.e. “false”, and generic name (*Hemiplecta*).

Falsiplecta integripedia Schileyko et Semenyuk, sp. nov.

(Figs 1, 2, 3)

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Locus typicus: Vietnam, Dong Nai Prov., Cat Tien National Park, 11°26'N, 107°21'E, 180 m a.s.l., monsoon broadleaved tropical forest.

Material. 7 specimens from the type locality.

Holotype and 6 paratypes housed in Zoological Museum of Moscow State University, No. Lc-40511.

Shell (Fig. 1) depressed, thin-walled, translucent, of 5 flattened whorls. Last whorl straight, not descending in front, with very weak peripheral angle. Color yellowish, with narrow brown peripheral band. Embryonic whorls with vague, much smoothed, radial wrinkles. Postapical whorls with very peculiar sculpture consisting of thin, irregular radial and delicate, dense, wavy, obliquely-spiral wrinkles. Aperture widely ovate, moderately oblique, with thin, not reflexed margins. Umbilicus very narrow, not perspective. Height of the holotype 22.2, diameter 37.8 mm; one of paratypes: 23.2 and 36.8 mm correspondingly.

In alcohol-preserved specimens margins of foot form fleshy undulating edge. Sole with numerous, quite distinct transversal folds; longitudinal grooves are absent (Fig. 2).

Jaw oxygnatous, smooth, with one median projection.

Albumen gland is very large (dissected animals were collected in December) (Fig. 3). Vas deferens

enters epiphallus subapically. Epiphallus short, swollen, subglobular. Penis not long, subcylindrical. On the penis/epiphallus junction there is a distinct curvature, on which short, fleshy caecum sits. Penial retractor attached to the apex of caecum. Internally, penis with few axial pilasters and locally with tiny tubercles; the spaces between the pilasters with small, numerous transversal folds. Vagina rather short, free oviduct about 1.5 times longer. Spermathecal duct short, voluminous reservoir lies on distal part of spermoviduct. In the holotype inside the reservoir 3 spermatophores were found. Spermatophore consists of very thin, translucent, elongated-ovate ampule and very thin, spineless caudal thread.

[Раковина (Рис. 1) прижатая, тонкостенная, просвечивающая, состоит из 5 оборотов. Последний оборот прямой, не опущен к устью, с очень лабым углом на периферии. Окраска желтоватая, с узкой коричневой периферической лентой. Эмбриональные обороты с неясными, сильно сглаженными, радиальными морщинками. Дефинитивные обороты с весьма своеобразной скульптурой, состоящей из слабых, нерегулярно расположенных радиальных и тонких, густых, волнистых кососпиральных морщин. Устье широко овальное, умеренно косое, с тонкими неотвёрнутыми краями. Пупок очень узкий, неперспективный. Высота раковины голотипа 22.2, диаметр 37.8 мм; один из паратипов: 23.2 и 36.8 мм соответственно.

У фиксированных в спирте экземпляров нога образует мясистые волнообразные краевые складки. Подошва покрыта чёткими многочисленными поперечными складками; продольных бороздок нет (Рис. 2).

Челюсть оксигнатная, гладкая, с медиальным выступом.

Белковая железа очень большая (анатомированные животные собраны в декабре) (Рис. 3). Семепровод впадает в эпифаллус субапикально. Эпифаллус короткий, вздутый, почти шаровидный. Пениса недлинный, почти цилиндрический. На границе между пенисом и эпифаллусом имеется чёткий перегиб, на котором располагается короткий мясистый цекум; ретрактор пениса крепится к вершине цекума. Внутренняя поверхность пениса несёт несколько продольных пилястров и, местами, крошечные бугорки; пространство между пилястрами занято тонкими поперечными складками. Вагина довольно короткая, свободный овидукт в 1,5 раза длиннее. Проток семеприемника короткий, объёмистый резервуар прилегает к дистальной части спермовидукта. У голотипа внутри резервуара обнаружено 3 сперматофора. Сперматофор состоит из удлинённо-овальной тонкостенной ампулы и тонкой хвостовой нити, лишённой выростов или шипов.]

Distribution. Type locality only.

Ecology. Mollusks are quite abundant in the rainy season (May–October), but never form swarms. Single specimens appear on forest floor, on logs and tree trunks, but never noticed higher than bush level. They are active in the night time, also in daylight on non-sunny days. In sunny dry days especially on the border time of abundance most snails appear attached to tree trunks, with aperture being closed by dry mucus. Usually ani-

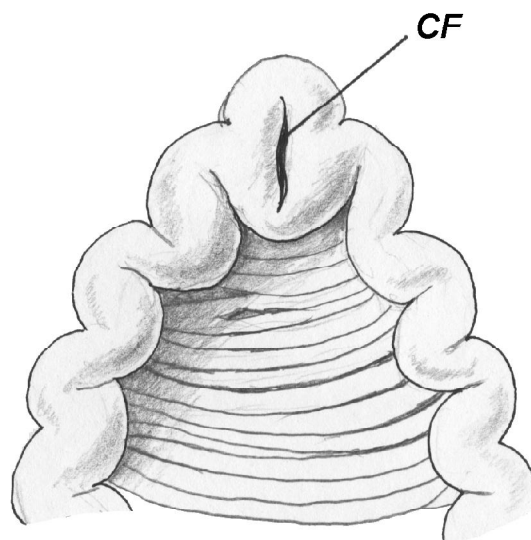


FIG. 2. Posterior end of cephalopodium of *Falsipecta integripedia* gen. et sp. nov. CF – caudal fossa.

РИС. 2. Задний конец цефалоподиума *Falsipecta integripedia* gen. et sp. nov. CF – каудальная ямка.

mals move slowly, and spend lots of time not moving with collapsed tentacles. Feeding was noticed on decaying plant material (mainly leaves), also they eat fungi fruit bodies.

Etymology. The name is a combination of “*integer*”, i.e. whole (without longitudinal grooves) and “*pedis*”, i.e. sole.

Discussion

Two characters of cephalopodium are very typical for Ariophantinae: tripartite sole, and the presence of caudal apparatus that includes caudal fossa and caudal horn (latter may be reduced). Reproductive tract initially is characterised by the presence of accessory organs (full set includes penial caecum, lime sac, flagellum, and sarcobelum).

With regard to the structure of the sole, other representatives of ariophantins are known, in which the sole is also not divided into three longitudinal fields, for example, in monotypical genera *Baiapecta* Laidlaw, 1956 (Malaya Peninsula), or *Rhysotopsis* Ancey, 1887 (Andaman Islands) [Godwin-Austen, 1899: 120, pl. XCIX, figs. 1–8, under generic name *Haughtonia* Godwin-Austen 1899, nom. praecoc., non Kinahan, 1859]. We would suggest that among Helicarionidae–Ariophantinae undivided sole is a secondary phenomenon, it may appear in different groups independently, and does not testify about relation between taxa.

Peculiarities of the structure of the reproductive tract deserve special consideration. One of the most

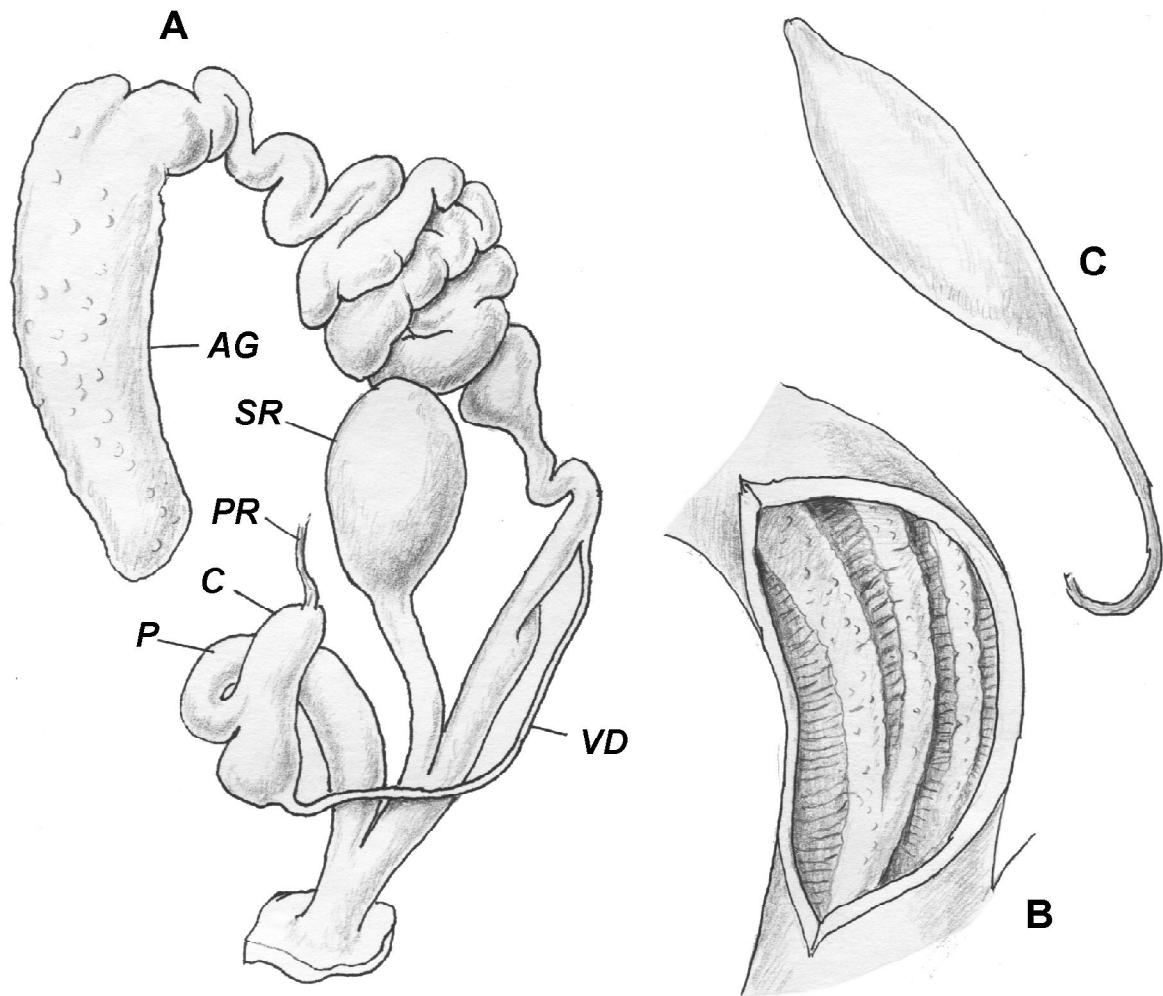


FIG. 3. Reproductive tract of holotype of *Falsiplecta integripedia* gen. et sp. nov. **A.** External view. **B.** Inner structure of penis. **C.** Spermatophore. *AG* – albumen gland; *C* – caecum; *P* – penis; *PR* – penial retractor; *SR* – spermathecal reservoir; *VD* – vas deferens.

РИС. 3. Репродуктивный тракт голотипа *Falsiplecta integripedia* gen. et sp. nov. **A.** Внешний вид. **B.** Внутреннее строение пениса. **C.** Сперматофор. *AG* – белковая железа; *C* – цекум; *P* – пенис; *PR* – ретрактор пениса; *SR* – резервуар семеприемника; *VD* – семепровод.

noticeable characters of *Falsiplecta* gen. nov. is the absence of sarcobelum. Currently Ariophantinae subfamily includes 66 taxa of generic rank; reproductive anatomy of 53 of them is known [Schileyko, 2002, 2003]. For the family the presence of sarcobelum is characteristic; however, there are 9 genera without this organ, namely: *Rasama* Laidlaw, 1932 (Hindustan Peninsula); *Sivella* Blanford, 1869 (SE Asia); *Pseudaustenia* Cockerell, 1891 (Hindustan Peninsula); *Eurychlamys* Godwin-Austen, 1899 (S India, Sri Lanka); *Satiella* Godwin-Austen, 1908 (S India, Sri Lanka, Andaman Islands); *Syama* Godwin-Austen, 1908 (Hindustan Peninsula); *Taphrospira* Blanford, 1905 (SE Asia, Andaman Islands, Indonesia); *Dalingia* Godwin-Austen, 1907 (North of Hindustan Peninsula); *Muangnua* Solem, 1966

(Thailand); *Sesara* Martens, 1860 (Hindustan Peninsula, Myanmar, Thailand, Laos).

The genus *Sitala* H. Adams, 1865 deserves a special mention: one of the species of this genus [*S. attega* (Stoliczka, 1871)] has a well-developed sarcobelum, whereas the other [*S. infula* (Benson, 1848)] does not have this organ [Stoliczka, 1871]. This fact indicates that the disappearance of additional organs can occur even within one genus, so the absence of sarcobelum does not always allow us to judge the relationship between genera.

A comparison of the genitalia of *Falsiplecta* gen. nov. and *Hemiplecta* [Schileyko, 2002: 1283, Fig. 1686] shows that these genera (at least their type species) differ mainly in two features: *Hemiplecta* has a penial papilla and sarcobelum, whereas in

Falsiplecta gen. nov. these organs are absent. As is shown above, the absence of sarcobelum can not be considered a reliable diagnostic feature; on the contrary, the absence of penial papilla in *Falsiplecta integripedia* gen. et sp. nov. indicates a sufficiently deep morphological and functional differences between the two genera. Therefore, we assume that the two genera under discussion could be related by kinship, although not very close.

As the presence of atrial or vaginal sarcobelum is a plesiomorph state for Ariophantinae [Schileyko, 1991], we suggest that the ancestor of *Falsiplecta* gen. nov. had a sarcobelum. Farther, penial retractor in *Falsiplecta* gen. nov. is attached to the caecum – as, for example, in *Dalingia* or *Macrochlamys*, although in other aspects these genera considerably differ from *Falsiplecta* gen. nov. Among the ariophantins, we could not find a genus with the characteristics of the reproductive tract, similar to those found in *Falsiplecta* gen. nov.. Thus it is obvious that *Falsiplecta* gen. nov. occupies an isolated position among the ariophantids, but to clarify this problem, information is still insufficient (the anatomy of representatives of 15 of the 66 known genera has not yet been studied).

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Falsiplecta integripedia gen. et sp. nov. из Вьетнама (Gastropoda, Pulmonata, Helicarionidae)

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РЕЗЮМЕ. На территории Национального парка Кат-Тьен обнаружен новый вид наземного лёгочного моллюска. Анатомическое исследование показало, что новый вид принадлежит новому роду, вероятно, отдалённо родственному роду *Hemiplecta*. Приводится иллюстрированное описание.

