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A new subgenus and new species of *Lophyra* from Vietnam (Coleoptera: Carabidae: Cicindelinae)

Новый подрод и вид *Lophyra* из Вьетнама (Coleoptera: Carabidae: Cicindelinae)

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KEY WORDS: Coleoptera, Carabidae, Cicindelinae, *Lophyra, Spilodella,* new subgenus, new species, Vietnam, identification key.

КЛЮЧЕВЫЕ СЛОВА: Coleoptera, Carabidae, Cicindelinae,*Lophyra, Spilodella,* новый подрод, новый вид, Вьетнам, определительная таблица.

ABSTRACT: A new subgenus *Spilodella* subgen.n. of genus *Lophyra* Motschulsky, 1859 and a new species *Lophyra (Spilodella) cora* sp.n. are described from Suen-Moc, Dong-Nai Province, southern Vietnam. The distinctions from related subgenera and species of genus *Lophyra* are discussed. The identification key of species of subgenus *Spilodella* is given.

РЕЗЮМЕ: Установлен новый подрод *Spilodella* subgen.n. в роде *Lophyra* Motschulsky, 1859 и описан новый вид *Lophyra (Spilodella) cora* sp.n. из южного Вьетнама (Суен-Мок, провинция Донг-Най). Обсуждаются отличия новых подрода и вида от других подродов и видов рода *Lophyra*. Дана определительная таблица видов подрода *Spilodella*.

The genus *Lophyra* was established by Motschulsky in 1859. In 1948 Rivalier described a subgenus *Eriolophyra* within genus *Lophyra* Motschulsky. Later he established three new subgenera: *Stenolophyra* and *Bothrylophyra* [Rivalier, 1957] as well as *Spilodia* [Rivalier, 1961]. In 1973 Mandl described a genus *Juengeria,* which now remained provisionally in genus *Lophyra* Motschulsky too [Wiesner, 1991; Werner, 2000] or even as separate genus which probably somewhat intermediate between genera *Lophyra* Motschulsky and *Lophyridia* Jeannel [Cassola, 2003]. The last subgenus of *Lophyra, Lophyrina,* was established by Cassola in 1977.

Among seven recent subgenera of *Lophyra* five of them, *Eriolophyra* Rivalier, 1948, *Stenolophyra* Rivalier, 1957, *Bothrylophyra* Rivalier, 1957, *Juengeria* Mandl, 1973 and *Lophyrina* Cassola, 1977 live in Africa, *Lophyra* (s.str.) occurs in Africa and Asia while *Spilodia* Rivalier, 1961 inhabits Indo-Malaysia region only.

The species of subgenus *Spilodia* well distinguished from other ones by trapeziform labrum with three or even five teeth on anterior margin (Figs. 4–6). However two species: *L. (S.) atkinsoni* (Gestro, 1893) and *L (S.) anataria* Naviaux, 1991 has more long labrum with rounded anterior margin and single tooth only (Figs. 2–3). The third species with the same characters (Fig. 1),*L. (S.) cora* sp.n., is described in the present paper. The distribution area of these species well marked geographic and placed in north-eastern part of distribution area of subgenus *Spilodia*. So, for three mentioned above species we are established a new subgenus, *Spilodella* subgen.n.

The holotype of new species is deposited in collection of Zoological Institute of Russian Academy of Sciences in St.-Petersburg (ZISP). One paratype is kept in collection of Zoology & Ecology Department of Moscow State Pedagogical University (MPU) and other ones — in collection of Svyatoslav Cherkasov, Moscow (cSCh)

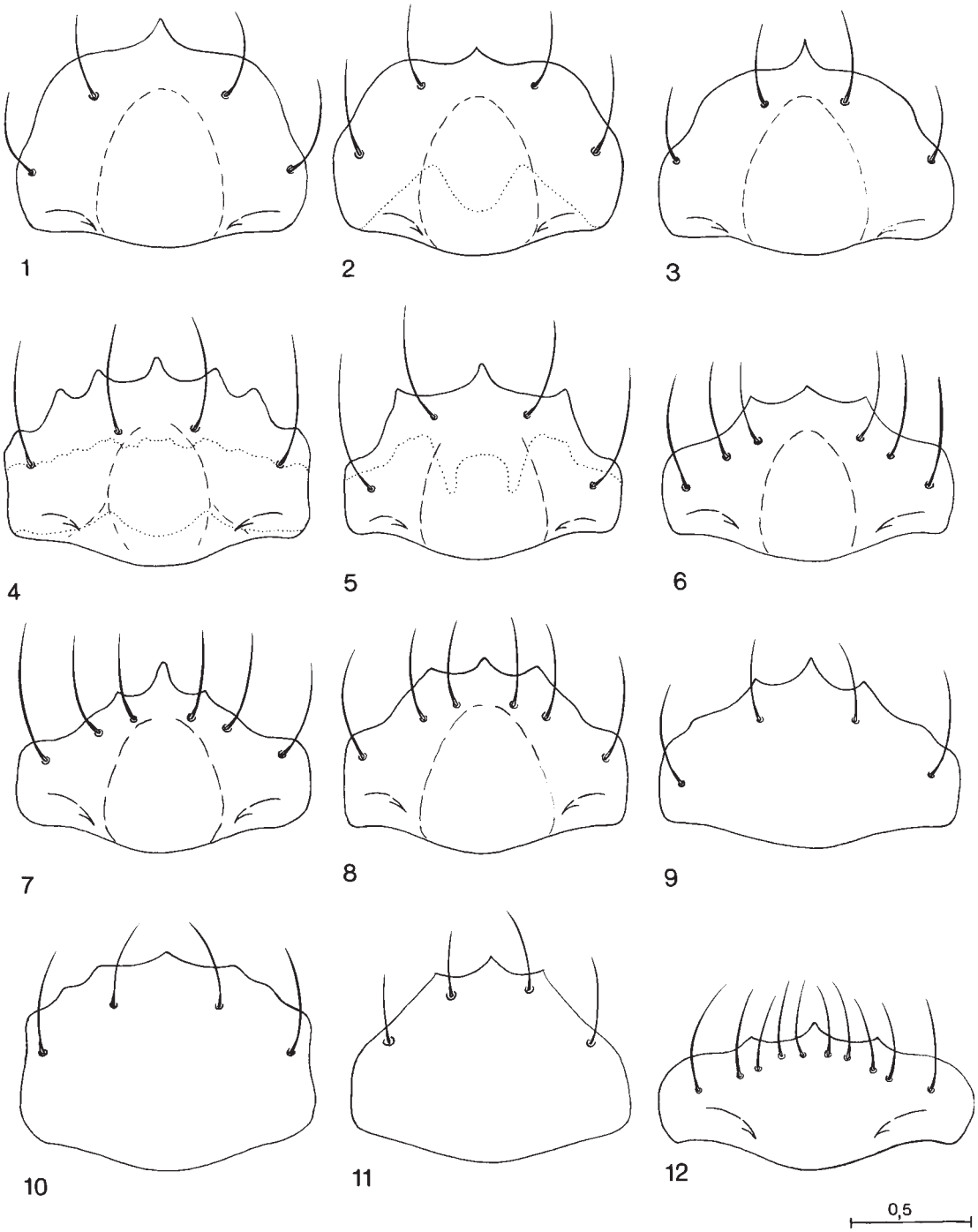
Lophyra (Spilodella) **subgen.n.**

Type species: *Lophyra atkinsoni* (Gestro, 1893)

DIAGNOSIS. A new subgenus including small species with body size (without labrum) not more than 10 mm. Labrum slightly transversal, in females 1.40–l.59 (1.49) times as wide as long (Figs. 42–43), unidentate, with rounded anterior margin, four submarginal setae and large, oval basal rise (Figs. 1–3). Elytral marking similar with subgenus *Spilodia* Rivalier (Figs. 19–25). Bursa copulatrix with long thin bifurcated sclerite (Figs. 36–38).

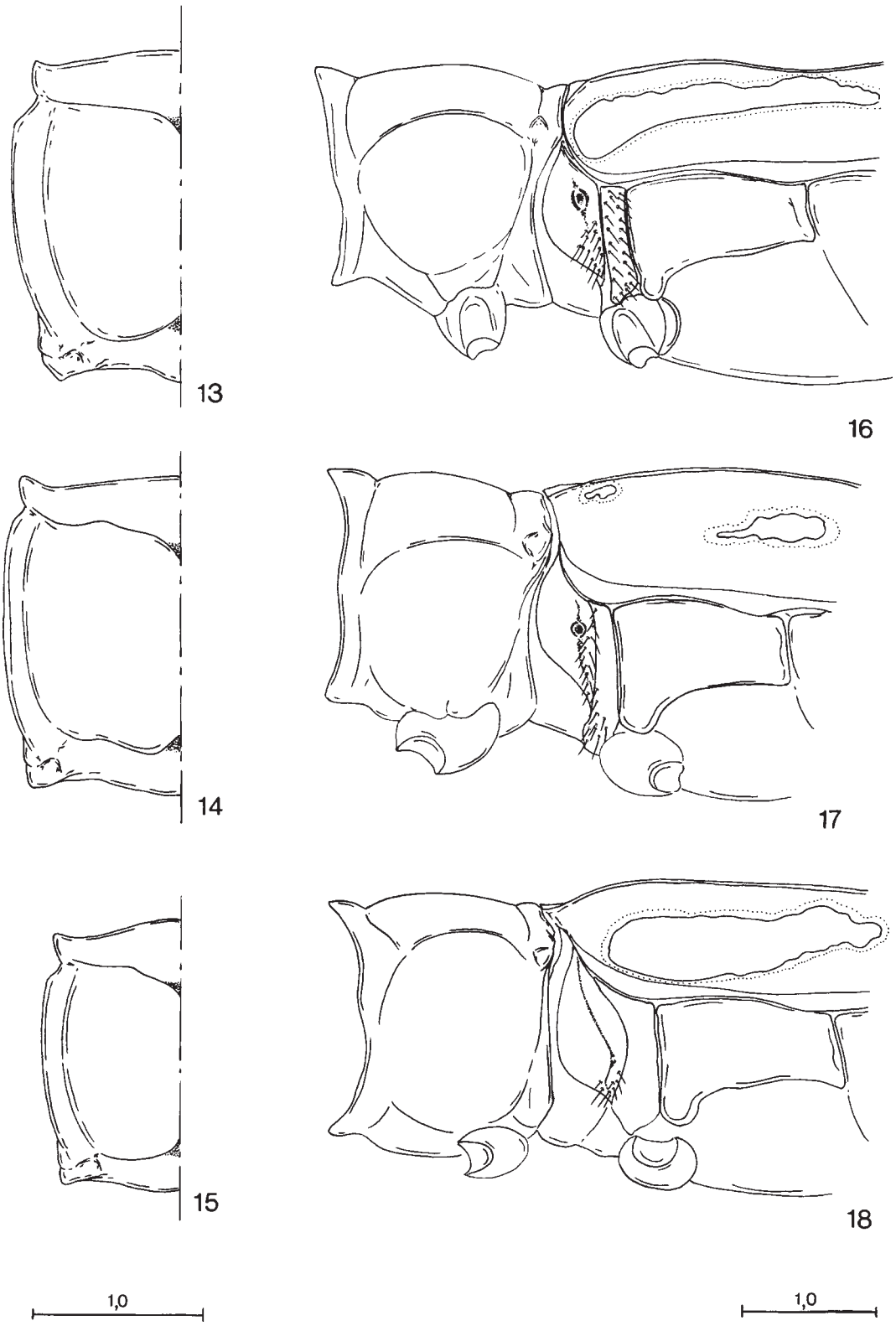
ETYMOLOGY. The name of the new subgenus is derived by combining Latin name *Spilodia* and the suffix *-ella* with reference to the small body size of species.

TAXONOMIC REMARKS. Subgenus *Spilodella* subgen.n. easily recognised among other subgenera of *Lophyra* by small body size and unidentate labrum with rounded



Figs 1–12. Species of genus *Lophyra* Motschulsky, labrum: 1 — *Lophyra (Spilodella) cora* sp.n. (holotype); 2 — *Lophyra (Spilodella) anataria* Naviaux (paratype); 3 — *Lophyra (Spilodella) atkinsoni* (Gestro); 4 — *Lophyra (Spilodia) striolata* (Illiger); 5 — *Lophyra (Spilodia) lineifrons* (Chaudoir); 6 — *Lophyra (Spilodia) multiguttata* (Dejean); 7 — *Lophyra* (s. str.) *neglecta* (Dejean); 8 — *Lophyra* (s.str.) *fuliginosa* (Dejean); 9 — *Lophyra (Stenolophyra) miscelliana* Cassola (after Cassola, 1986); 10 — *Lophyra (Bothrylophyra) minax* (Wallengren) (after Wiesner, 2001); 11 — *Lophyra (Lophyrina) latelimbata* (Müller) (after Cassola, 1977); 12 — *Lophyra (Eriolophyra) alba* (Horn). Scale bar in mm.

Рис. 1–12. Виды рода *Lophyra* Motschulsky, верхняя губа: 1 — *Lophyra (Spilodella) cora* sp.n. (голотип); 2 — *Lophyra (Spilodella) anataria* Naviaux (паратип); 3 — *Lophyra (Spilodella) atkinsoni* (Gestro); 4 — *Lophyra (Spilodia) striolata* (Illiger); 5 — *Lophyra (Spilodia) lineifrons* (Chaudoir); 6 — *Lophyra (Spilodia) multiguttata* (Dejean); 7 — *Lophyra* (s. str.) *neglecta* (Dejean); 8 — *Lophyra* (s.str.) *fuliginosa* (Dejean); 9 — *Lophyra (Stenolophyra) miscelliana* Cassola (по Cassola, 1986); 10 — *Lophyra (Bothrylophyra) minax* (Wallengren) (по Wiesner, 2001); 11 — *Lophyra (Lophyrina) latelimbata* (Müller) (по Cassola, 1977); 12 — *Lophyra (Eriolophyra) alba* (Horn). Масштабная линейка в мм.



Figs 13–18. Species of subgenus *Spilodella* subgen.n., pronotum and coupling sulcus: 13–15 — left half of pronotum; 16–18 — coupling sulcus, left view; 13 and 16 — *L. (S.) cora* sp.n. (holotype); 14 and 17 — *L. (S.) anataria* Naviaux (paratype); 15 and 18 — *L. (S.) atkinsoni* (Gestro). Scale bars in mm.

Рис. 13–18. Виды подрода *Spilodella* subgen.n., переднеспинка и копулятивный шов: 13–15 — левая половина переднеспинки; 16–18 — копулятивный шов, вид слева; 13 и 16 — *L. (S.) cora* sp.n. (голотип); 14 и 17 — *L. (S.) anataria* Naviaux (паратип); 15 и 18 — *L. (S.) atkinsoni* (Gestro). Масштабная линейка в мм.

anterior margin (Figs. 1–3). Proportion of labrum — 1.40–1.59 (1.49) times as wide as long — well distinguished a new subgenus from other ones too (Fig. 42). Only African subgenera *Bothrylophyra* and *Lophyrina* has similar slightly transversal labrum, 1.40–1.50 and 1.42–1.50 times as wide as long respectively (Fig. 43). However in *Bothrylophyra* five, while in *Lophyrina* three labial teeth are observed (Figs. 1–3 and 10–11). It is interesting that proportion of labrum and elytra in *Eriolophyra*, *Stenolophyra*, *Spilodia*, *Spilodella* subgen.n., *Bothrylophyra* and *Lophyrina* are placed in different marginal zones for such proportion for *Lophyra* (s.str.) (Fig. 42). According to our mind, this fact well supported legitimation of establishing all these subgenera. Subgenus *Spilodella* including three recent species: *L. (S.) atkinsoni* from Myanmar (Burma), *L. (S.) anataria* from Thailand and *L. (S.) cora* sp.n. from southern Vietnam.

Lophyra (Spilodella) cora **sp.n.**
Figs 1, 13, 16, 19–21, 26–28, 31–33, 36, 39.

TYPE MATEREIAL: Holotype: ♀, Vietnam, Dong-Nai Prov., Suen-Moc, at path in dipterocarp forest, 15-25.05.1990, leg. A. Kuznetsov (ZISP). Paratypes: same locality and date, 2 ♀♀ (MPU, cSCh).

DIAGNOSIS. Relatively small species; top of head, disc of pronotum and elytra cupric with golden or bronze reflection. Supraorbital area with four–five deep, rough striae. Labrum testacies, slightly transversal, unidentate, with 4 setae and oval basal rise. Pronotum subquadrate, rounded at sides. Coupling sulcus as a deep rounded pit near the middle of mesepimerum. Legs with distinct bluish-green lustre except pale trochanters and brownish knees. Elytra elongate, slightly dilated after basal third; with long humeral and apical lunulae, interrupted on sublateral and subsutural portions middle band, and three small, suboval spots along suture in basal half of elytra; humeral lunule and sublateral portion of middle band often coupling together. Posterior margin of female sternum 8-th asetose or with one–three setae; lateral margin with seven–eight setae; syntergum 9&10 oval, with l6–18 setae apically and 21–23 setae laterally; ventral notch on second gonacoxa with three long and seven short spiniform setae; addition sclerite small; oviduct sclerite large, transversal; bursa copulatrix with long bifurcated sclerite.

DESCRIPTION. Length without labrum is 8.4–9.1 (8.8) mm. Head metallic bluish-green; on fronts, vertex and supraorbital area bright cupric with golden or purple reflection; rough wrinkled; supraorbital area with four–five deep, rough striae and two long setae near the edge of each eye. Clypeus cupric-bronze with light golden tinge laterally and bluish-green in the middle. Genae green with golden or golden-cupric reflection; finely, longitudinally striated, deep pubescent by short white pressed hairs. Labrum fully testacies except narrow brownish anterior margin; long, 1.40–l.47 (1.44) times as wide as long; unidentate; with rounded anterior margin and four submarginal setae (in one specimen two setae on the left side and only one on the right side); stiffer pores replaced away behind of anterior margin (middle pares no less that four and lateral pares no less that two diameters of pores); basal dimples shallow, poor developed; basal rise large, oval (Fig. 1). Mandibles slender, relatively short; brown, testacies basally. Labial and maxillary palpi slender, elongate, yellowish, the last joint dark brown with violet-green metallic reflection. Antennae slender, relatively long, projected to the elytral one-third only; scape and 2–4th antennomeres greenish or blue-greenish, joints 3–4th with golden-cupric or purple-cupric reflection apically; a single long seta on tip of scape; article 3th with four and article 4th with one short spiniform white setae except for apical ones; antennomeres 5–11th dull black, fully and evenly covered with short pubescence.

Pronotum subquadrate, 1.03–1.06 (1.04) times as wide as long, distinct rounded at sides, with maximum width near the middle (Fig. 13). Pronotum disc bright, metallic cupric with golden reflection around central area and along the front and hind lobes, green on the sides as well as on the front and hind protruding tubercles, with bright blue notopleural suture and midline; surface rough wrinkled, pubescent laterally by short white hairs. Proepisternum purple-cupric, with golden lustre basally; finely wrinkled; sparsely pubescent basally. Thoracic segments metallic bluish-green, mesothorax with golden-cupric reflection; mesepimerum deep haired by white setae, anterior margin of mesepimerum and hind coxa as well as lateral sides of mesothorax with more sparse white hairs. Coupling sulcus on mesepimerum as a deep rounded pit near the middle (Fig. 16). Coxa brown, blue-green reflected, with single thin and long seta in the inner surface. Trochanters pale, brownish-yellow, anterior and middle ones with a single seta apically; femora with metallic green reflection, except brownish knees; tibia with bluish-green lustre except brownish basal third; tarsus bluish-green with distinct violet lustre.

Elytra elongate, 1.74–1.76 (1.75) times as long as wide, slightly dilated after basal third; metallic cupric-bronze with large deep blue points in humeral area and numerous, small uniform diffused bluish-green points, with golden-green area on shoulders and very narrow deep violet area along elytral sides. Scutellum bright cupric with green reflection basally; elytral suture poor developed, not bordered; apical margin of elytra rounded, finely serrulate, sutural tooth small and blunt; epipleura blue-violet, dull brown in basal third. Elytral marking consisting of long humeral lunule; interrupted on sublateral and subsutural portions middle band; long apical lunule with distinct narrow part in the middle and three small, suboval spots situated along suture in the basal half of elytral disc (Fig. 21); humeral lunule and sublateral portion of middle band often coupling together (Figs. 19–20).

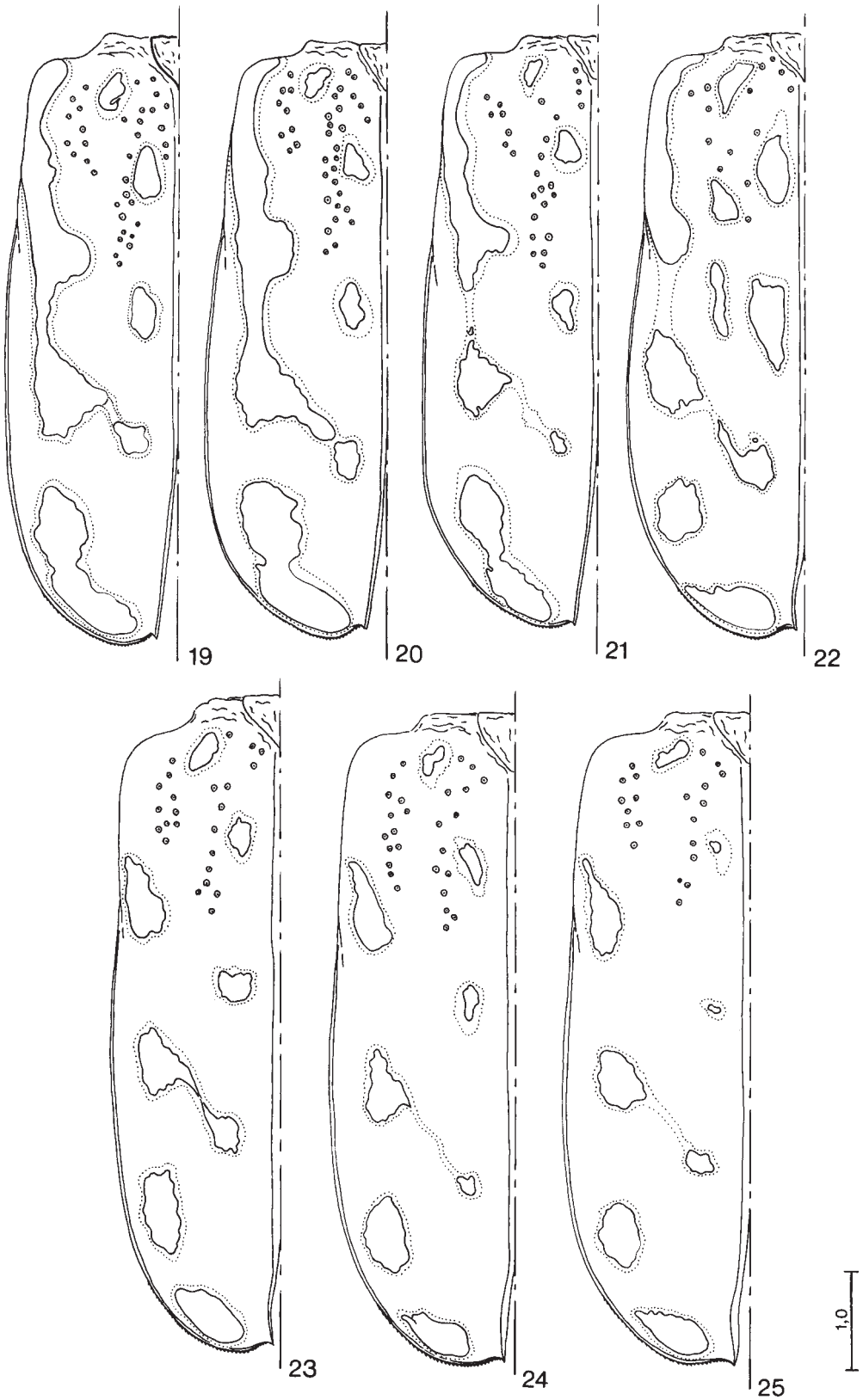
Abdominal sternites greenish-blue; glabrous except for two long setae in the middle of sternites 3–5th, dense white pubescence along lateral edge of sternites 1–3th and a group of sparse white setae near anterio-lateral margin of sternum 4th.

Posterior margin of sternum 8th with 1–3 long setae or without setae at all (in first specimen three setae on the left side and only one on the right; in second specimen one seta on the right side but the left side asetose; in third specimen both sides asetose); apices truncated, with two stout, short setae; lateral margin with 7–8 long setae (Figs. 26–28). Syntergum 9&10 oval, 1.17–1.20 (1.18) times as long as wide; with 16–18 long setae apically and 21–23 long setae laterally (Figs. 31–33). Base of second gonapophyses glabrous; ventral notch on second gonacoxa poorly developed, with three long setae apically and seven short spiniform setae basally; addition sclerite slightly elongate, indistinct and small; oviduct sclerite large, transversal, 1.61–1.63 (1.62) times as wide as long; bursa copulatrix oval, with long thin bifurcated sclerite (Figs. 36 and 39).

Male unknown.

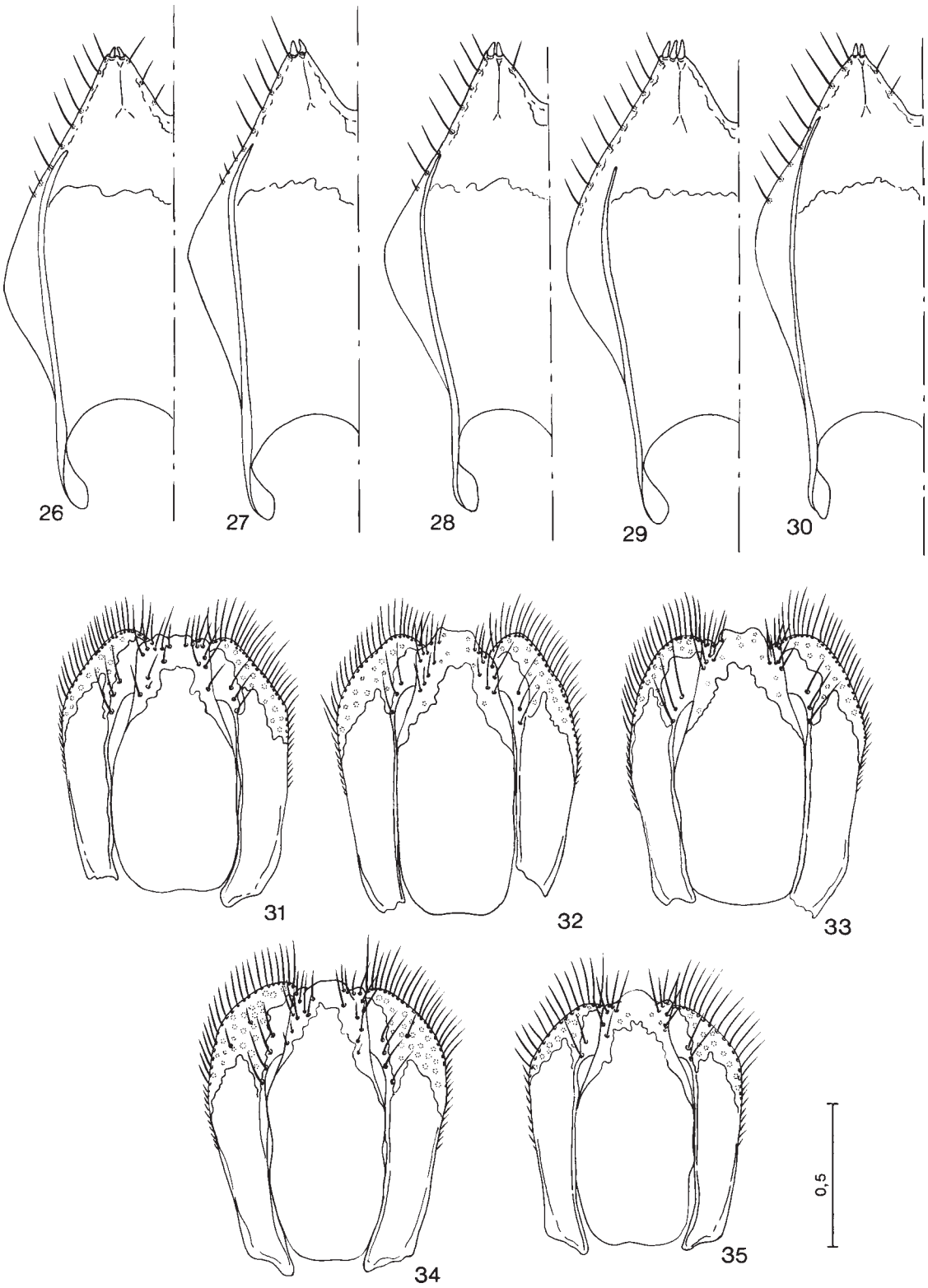
ETYMOLOGY. The name of the new species is derived from Greece χόρα *[kórē]* — girl, because for the present time only females are known.

TAXONOMIC REMARKS. *Lophyra (Spilodella) cora* sp.n. is well recognised among other related species. From *L. (Spilodella) anataria* a new species distinguished by complete humeral lunule which often connected with medial band



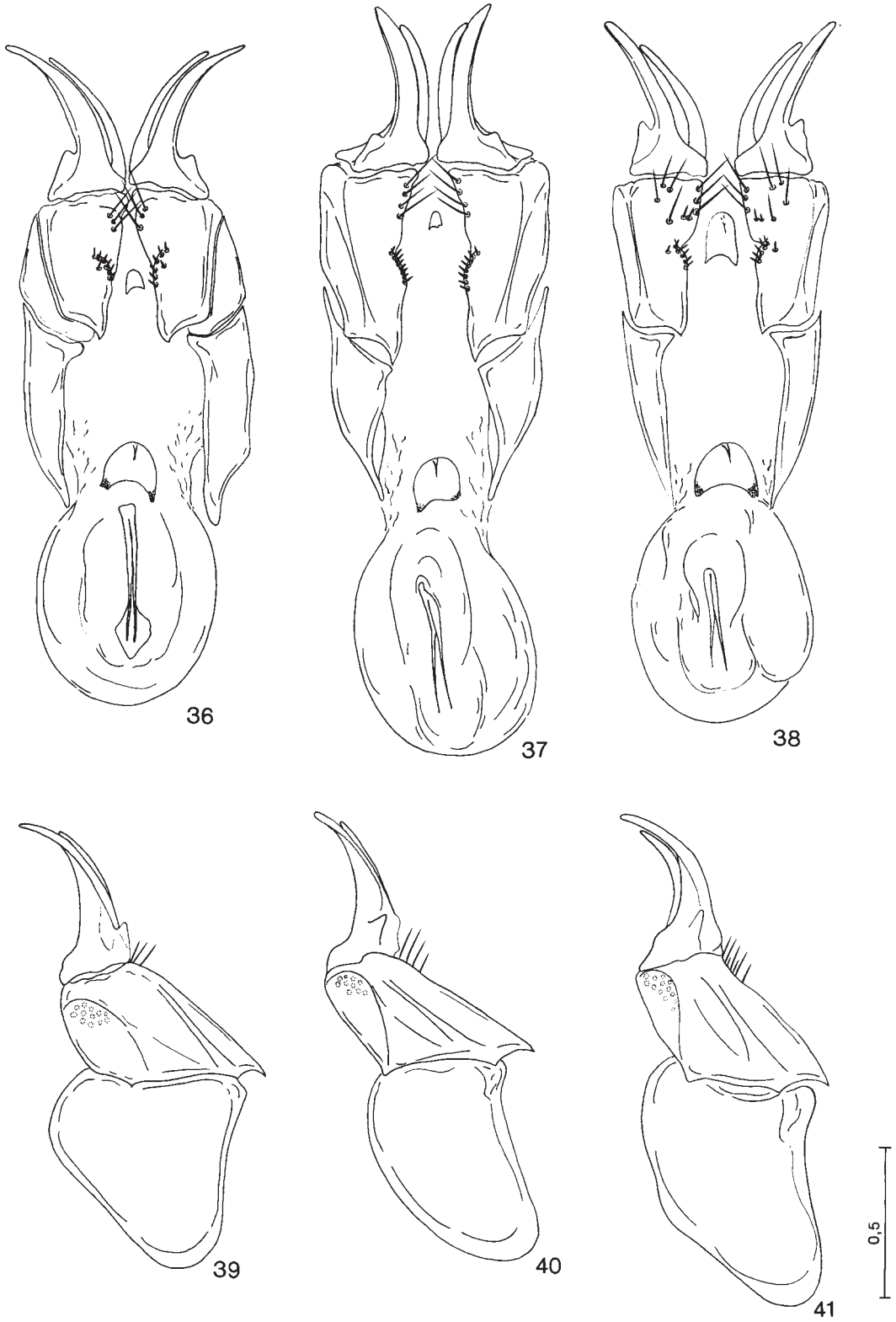
Figs 19–25. Species of subgenus *Spilodella* subgen.n., left elytra: 19–21 — *L. (S.) cora* sp.n. (19 — holotype, 20–21 — paratypes) 22 — *L (S.) atkinsoni* (Gestro); 23–25 — *L. (S.) anataria* Naviaux (paratypes). Scale bar in mm.

Рис. 19–25. Виды подрода *Spilodella* subgen.n., левое надкрылье: 19–21 — *L. (S.) cora* sp.n. (19 — голотип, 20–21 — парартипы); 22 — *L (S.) atkinsoni* (Gestro); 23–25 — *L. (S.) anataria* Naviaux (паратипы). Масштабная линейка в мм.



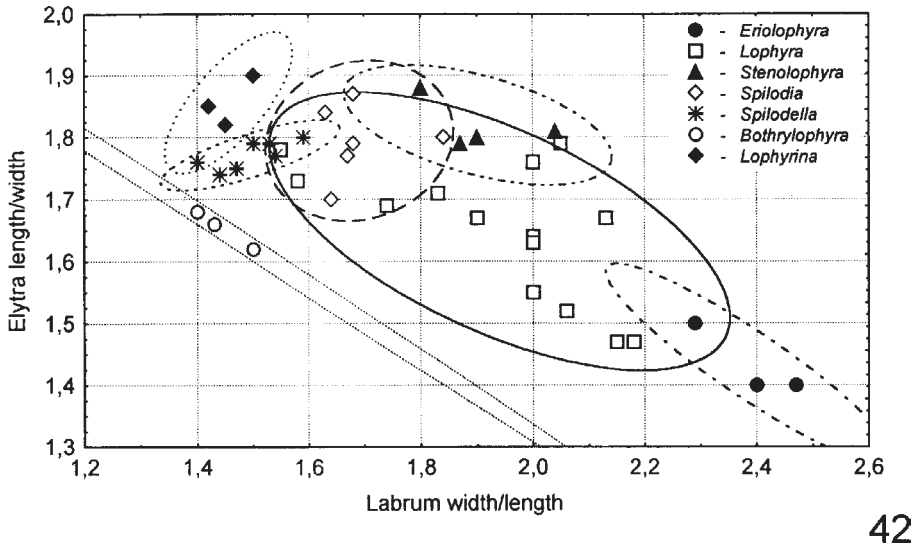
Figs 26–35. Species of subgenus *Spilodella* subgen. nov., female genitalia: 26–30 — 8th sternum, ventral view; 31–35 — 9&10 syntergum, dorsal view; 26–28 and 31–33 — *L. (S.) cora* sp.n. (28 and 31 — holotype, 26–27 and 32–33 — paratypes); 29 and 34 — *L. (S.) anataria* Naviaux (paratype); 30 and 35 — *L (S.) atkinsoni* (Gestro). Scale bar in mm.

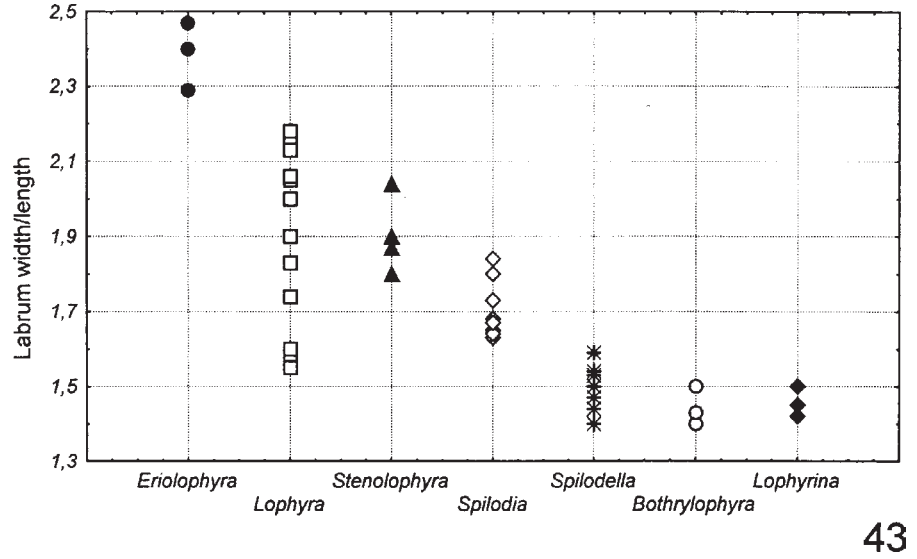
Рис. 26–35. Виды подрода *Spilodella* subgen. nov., гениталии самок: 26–30 — 8-й стернит, вид снизу; 31–35 — 9&10 синтергит, вид сверху; 26–28 и 31–33 — *L. (S.) cora* sp.n. (28 и 31 — голотип, 26–27 и 32–33 — паратипы); 29 и 34 — *L. (S.) anataria* Naviaux (паратип); 30 and 35 — *L (S.) atkinsoni* (Gestro). Масштабная линейка в мм.



Figs 36–41. Species of subgenus *Spilodella* subgen.n., female genitalia, second gonapophyses and gonacoxa: 36–38 — ventral view; 39–41 — lateral left view; 36 and 39 — *L. (S.) cora* sp.n. (holotype); 37 and 40 — *L (S.) anataria* Naviaux (paratype); 38 and 41 — *L (S.) atkinsoni* (Gestro). Scale bar in mm.

Рис. 36–41. Виды подрода *Spilodella* subgen.n., гениталии самок, вторые гонапофизы и гонакоксы: 36–38 — вид снизу; 39–41 — вид слева; 36 и 39 — *L. (S.) cora* sp.n. (голотип); 37 и 40 — *L (S.) anataria* Naviaux (паратип); 38 и 41 — *L (S.) atkinsoni* (Gestro). Масштабная линейка в мм.





Figs 42–43 Morphological measurements: subgenera of *Lophyra* Motschulsky.
Рис. 42–43. Морфометрические показатели: подроды *Lophyra* Motschulsky.

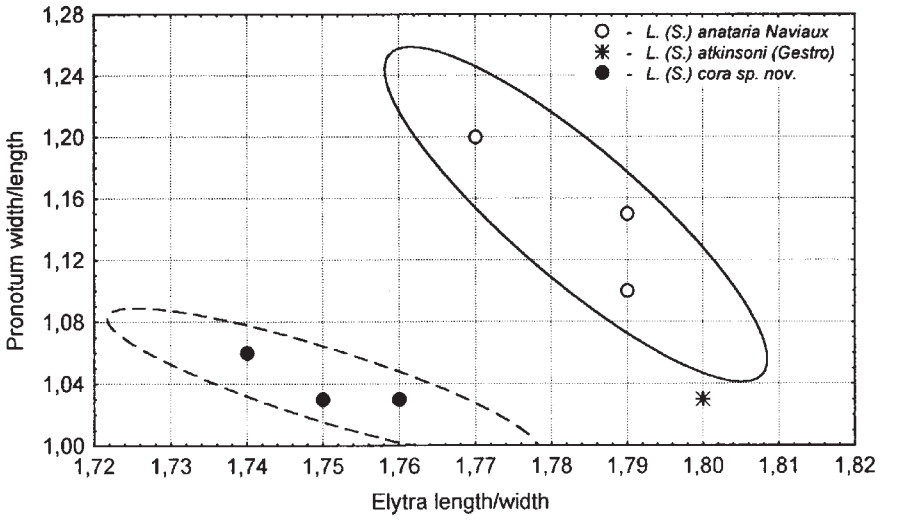
and complete apical lunule (Figs. 19–21 and 23–25); fully pale labrum (Figs. 1 and 2); narrower labrum and pronotum (Figs. 13–14 and 45); three setae on inner sides of 9&10 syntergum (Figs. 31–34); two stout setae on apices of 8th sternum (Figs. 26–29) and larger oviduct sclerite (Figs. 36–37). From *L. (Spilodella) atkinsoni* the new species easily distinguished by complete apical lunule and lacking of additional row of small spoons between humeral lunule and subsutural spots (Figs. 19–22); longer labrum (Fig. 45); shape of coupling sulcus (Figs. 16 and 18); three setae on inner sides of 9&10 syntergum (Figs. 31–33 and 35); smaller additional sclerite between second gonacoxa (Figs. 36 and 38) and chaetotaxy of its ventral notches (Figs. 39 and 41).

For identification of species of subgenus *Spilodella* the following key is given:

1(2). Humeral lunule long, complete, often coupling with medial band (Figs. 19–22). Labrum fully pale (Figs. 1 and 3). Pronotum narrower, 1.03–1.06 times as wide as long (Figs. 13, 15 and 44). Apices of 8th sternum with two short stout setae (Figs. 26–28 and 30). Oviduct sclerite larger (Figs. 36 and 38) 3

2(1). Humeral lunule short, incomplete, presented by oval basal portion only, always separated from medial band (Figs. 23–25). Base of labrum darkened (Fig. 2). Pronotum wider, 1.1–1.2 times as wide as long (Figs. 14 and 44). Apices of 8th sternum with three short stout setae (Fig. 29). Oviduct sclerite smaller (Fig. 37) .... *Lophyra (Spilodella) anataria* Naviaux, 1991

3(4). Labrum shorter, 1.59 times as wide as long (Fig. 45). Apical lunule presented by two separate spots; between humeral lunule and subsutural row of spots placed one or two elongate additional spots; humeral lunule separated from medial band (Fig. 22). Coupling sulcus on mesepimerum as a thin sinuate groove (Fig. 18). Lateral



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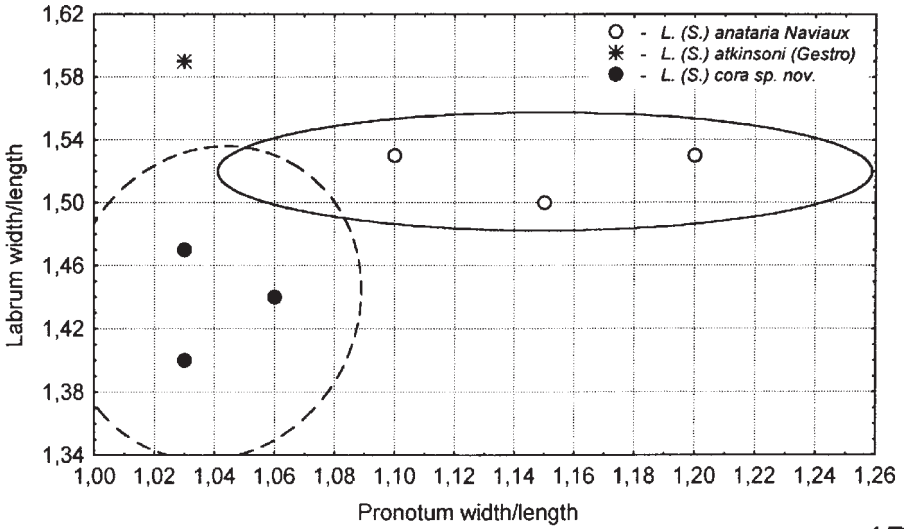

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Figs 44–45. Morphological measurements: species of subgenus *Spilodella* subgen.n.
Рис. 44–45. Морфометрические показатели: виды подрода *Spilodella* subgen.n.

margin of 9&10 syntergum with 14 long setae, it inner sides with two long setae (Fig. 35). Ventral notches of second gonacoxa with 7 long, thin setae; additional sclerite large, some size as oviduct sclerite (Figs. 38 and 41) ..... *Lophyra (Spilodella) atkinsoni* (Gestro, 1893)

4(2). Labrum longer, 1.40–1.47 (1.44) times as wide as long (Fig. 45). Apical lunule complete; additional spots between humeral lunule and subsutural row of spots absent; humeral lunule often coupling with medial band (Figs. 19–21). Coupling sulcus on mesepimerum as a deep rounded pit near the middle (Fig. 16). Lateral margin of 9&10 syntergum with 21–23 long setae, it inner sides with three long setae (Fig. 31–33). Ventral notches of second gonacoxa with 3 long, thin setae; additional sclerite distinct smaller than oviduct sclerite (Figs. 36 and 39) ..... *Lophyra (Spilodella) cora* sp.n.

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References

Cassola F. 1977. Study sui Cicindelidi. 17. *Lophyra (Lophyrina* nov.) *latelimbata* (G. Müller) nova comb. // Atti Soc. Ital. Sci. nat. Museo civ. Stor. Nat. Milano. T.118. P.402–406.

Cassola F. 1986. Studies on Cicindelids. 42. A new *Lophyra* from Mogadishu, Somalia (Coleoptera: Cicindelidae) // Monitore zoologico italiano (N.S.). T.21. P.25–30.

Cassola F. 2003. Studies of Tiger Beetles. 138. Note on *Juengeria juengeriorum* (Mandl, 1973) (Coleoptera: Cicindelidae) // Z. Arb. Gem. Öst. Ent. T.55. P.59–60.

Gestro R. 1893. Viaggio di Leonardo Fea in Birmania e regioni vicine. LIII. Enumerazione delle Cicindele // Annali del

Museo Civico di Storia Naturale di Genova. T.13. No.33. P.348–381.
Mandl K. 1973. Neue Cicindelidae-Formen aus den tropischen Gebieten Afrikas und Süd-Americas // Entomologische Arbeiten aus dem Museum G. Frey. T.23. S.290–303.
Motschulsky V.I. 1859: II. Entomologie spéciale. Insectes der Indes orientales, et de contrées analogues // Études Entomologiques. T.8. P.25–30.
Naviaux R. 1991. Les Cicindèles de Thaïlande, étude faunistique (Coleoptera, Cicindelidae) // Bulletin mensuel de la Société linnéenne de Lyon. T.60. P.209–288.
Rivalier É. 1961. Les Cicindèles du genre *Lophyra* (Motschulsky) // Revue Française d'Entomologie. T.15. P.49–74.
Rivalier É. 1957. Démembrement du genre *Cicindela* Linné. III. Faune Africano-Malgache // Revue Française d'Entomologie. T.24. P.312–342.
Rivalier É. 1961. Démembrement du genre *Cicindela* L. (suite) (1). IV. Faune Indomalaise // Revue française d'Entomologie. T.28. P.121–149.
Werner K. 2000. The tiger beetles of Africa (Coleoptera, Cicindelidae). Vol. 2. Taita Publ. 207 pp.
Wiesner J. 1992. Checklist of the Tiger Beetles of the World (Coleoptera, Cicindelidae). Keltern: Erna Bauer Verl. 364 pp.
Wiesner J. 2001. Results of Thomas Wiesner's explorations in southern Africa 1999 (Coleoptera: Cicindelidae). 70 Contribution towards the knowledge of Cicindelidae // Entomologische Zeitschrift. T.111. P.53–57.