

A new species of the genus *Autolyca* Stål (Phasmatoptera) from Mexico

Новый вид рода *Autolyca* Stål (Phasmatoptera) из Мексики

A.V. Gorochov¹ & M.V. Berezin²
А.В. Горохов¹, М.В. Березин²

¹ Zoological Institute, Russian Academy of Sciences, Universitetskaya nab. 1, St.-Petersburg 199034, Russia. E-mail: orthopt@zin.ru
Зоологический институт РАН, Университетская наб., 1, Санкт Петербург 199034, Россия.

² Moscow Zoo, Bolshaya Gruzinskaya ul. 1, Moscow 123242, Russia. E-mail: insect_mzoo@mail.ru
Московский зоопарк, Большая Грузинская ул. 1, Москва 123242, Россия.

KEY WORDS: stick-insects, Phasmatoptera, *Autolyca*, new species, Mexico, Chiapas.

КЛЮЧЕВЫЕ СЛОВА: палочники, Phasmatoptera, *Autolyca*, новый вид, Мексика, Чьяпас.

ABSTRACT. The genus *Autolyca* Stål is recorded for Mexico at the first time. It is presented only in Southern Chiapas by a new species, *A. elena* sp.n. which differs from all other congeners in the characteristic coloration, and structure of abdominal apex. Its description and brief information about its biological peculiarities are given.

РЕЗЮМЕ. Род *Autolyca* Stål впервые отмечается для Мексики. Он представлен только в южном Чьяпасе новым видом *A. elena* sp.n., который отличается от всех других видов этого рода характерной окраской, и строением вершины брюшка. Приводятся описание и краткие сведения о его биологических особенностях.

Introduction

Judging by the recent revision of neotropical stick insects from the tribe Anisomorphini sensu Bradley et Galil [Conle & Hennemann, 2002] and electronic catalogue [Brock, 2007], the genus *Autolyca* Stål, 1875 contains five or eight species respectively. Four of them (including type species of this genus) are distributed in Central America: Guatemala, El Salvador, and Belize. All other species are described from Ecuador, Peru, Chili, and New Caledonia. Inclusion of these not Central American species in *Autolyca* is possibly erroneous. But distribution of this genus in southern Mexico is highly probable, and it is supported here by the finds of a new species from Mexican state Chiapas.

The above-mentioned authors included these genus and “tribe” in the “subfamily Pseudophasmatinae” of the “family Pseudophasmatidae”. In the above-mentioned catalogue, the extinct taxa are ignored, and recent ones are divided into “superfamilies”, “infraorders” and “suborders”. However majority of specialists on recent Phasmatoptera establish too high ranks for recent higher taxa

of this order, although all these taxa are probably a monophyletic group originated from a general ancestor rather late (maybe in Cretaceous or beginning of Caenozoic). During very long time, from Carboniferous to Jurassic, Phasmatoptera were presented by only extinct groups much more different from each other and from all recent groups than these recent groups, from each other [Gorochov, 2001]. Moreover one of these extinct group (evidently ancestral for all recent stick insects) existed from Jurassic to Late Eocene as minimum [Gorochov, 2002; Gorochov & Rasnitsyn, 2002]. So, it is reasonable to include all recent stick insects in the same superfamily, to reduce ranks of their higher taxa, and to use highest ranks (from superfamily to suborder) for separation of more different extinct taxa.

The material studied here was collected during jointed field works of investigators from the Zoological Institute (Russian Academy of Sciences, St.-Petersburg), Moscow Zoo, and “El Collegio de la Frontera Sur” (Chiapas, Tapachula) in southern Chiapas (May 2006). This material, including type series of a new species, is deposited in the collection of Zoological Institute, St.-Petersburg, Russia (ZISP).

Autolyca elena Gorochov et Berezin, sp.n.

Figs 1–9, 12–13

HOLOTYPE: ♀, Mexico, Chiapas, -130 km WN of city Tapachula, district Acacoyagua, mountains Sierra Madre de Chiapas (Sierra del Soconusco), environs of vill. Escuintla near biosphere reserve El Triunfo, 1100–1400 m, 15–16.V.2006, M. Berezin and E. Tkatsheva; **PARATYPES.** 2 ♀, 5 ♂, same data as for holotype [all in ZISP].

DESCRIPTION. Female (holotype). General appearance similar to that of other congeners, but size of body slightly or hardly larger. Coloration similar to that of male from Fig. 1, black with more or less light traces of ocelli, greyish anteclypeus, brown labrum and distal parts of labium, and yellowish (pink in living specimen) most part of antennae (2 proximal segments, distal part of 13th, 14th, 15th, 17th, and 21th segments, most part of 16th and 19th segments, as well as 18th, 20th, and 22th



Fig. 1. Male of *Autolyca elena* sp.n. in living condition (foto by M.V. Berezin).

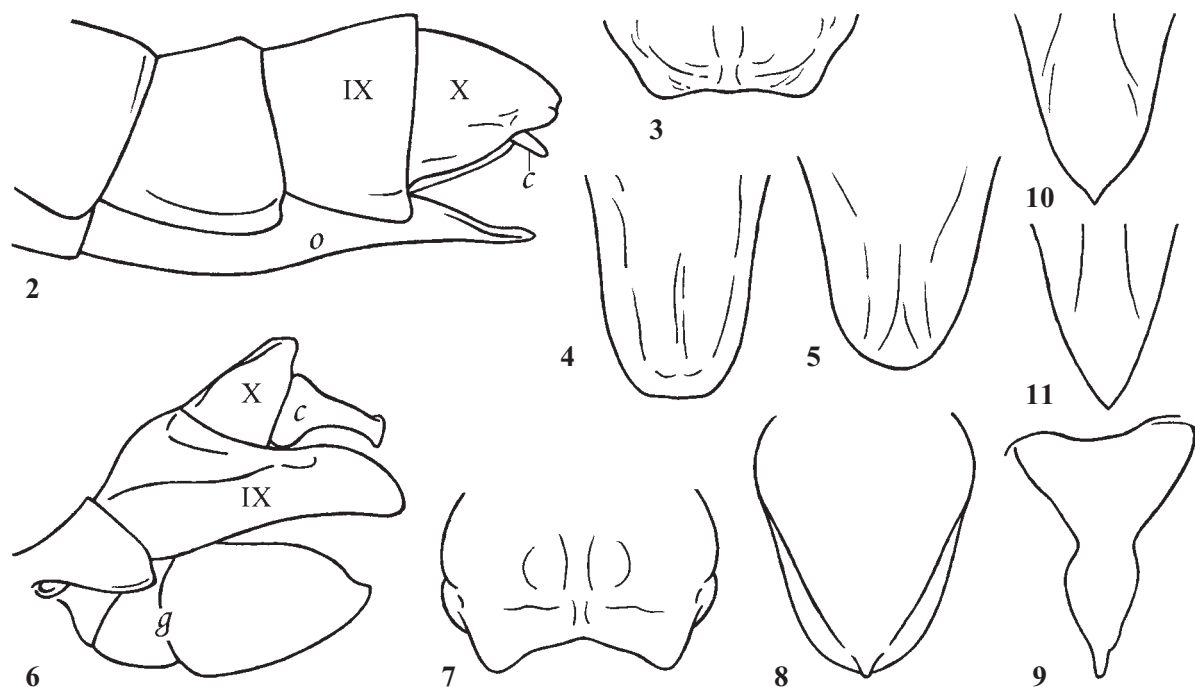
Рис. 1. Самец *Autolyca elena* sp.n. в естественной обстановке (фото М.В. Березина).

segments darkened, from brown to black). Head 1.45 times as long as wide; upper part of head behind rostral apex and before median ocellus with small (but distinct) concavity; area between lateral ocelli hardly concave; rostrum between antennal cavities much narrower than scape (scape almost 2.5 times as wide as this part of rostrum); antennae approximately equal to body in length; their scape hardly longer than its width, slightly shorter and almost twice wider than 3rd antennal segment; pedicellus intermediate between above-mentioned segments in length and slightly shorter than scape; 14–22th antennal segments with secondary segmentation. Pronotum almost 1.4 times as long as head, with very large repellent glands and distinct transverse concavity before middle of disc; mesonotum almost 1.15 times as long as pronotum, almost 1.05 times as long as metanotum and 1st abdominal tergite together, with very small (tubercle-like) rudiments of tegmina; metanotum with distinct (lobule-like) rudiments of hind wings and almost indistinct traces of fusion with 1st abdominal tergite. Legs long; each leg with tibia somewhat longer than femur; ventral surface of all tibiae with very short pubescence; fore legs shorter than hind legs and longer than middle legs; fore tibiae about 2.4 times as long as fore tarsi; middle tibiae about 2.2 times as long as middle tarsi; hind tibiae twice as long as hind tarsi. Abdomen insignificantly longer than head, thorax, and 1st abdominal tergite together; all lateral lobes of tergites rather narrow (short) and with more or less rounded hind corner (Fig. 2); 10th abdominal tergite with weak (but distinct) median keel in hind

half and almost truncate apex (Fig. 3); cerci small, almost conical; operculum with convex proximal half, flattened distal one, and roundly truncate apex (Figs 2, 4); rudiments of ovipositor rather large, but completely covered with 10th abdominal tergite and operculum.

VARIATIONS. Sometimes head 1.35 times as long as wide, 13th antennal segment almost completely light, antennal flagellum with short additional (23th) darkened antennal segment, lateral lobes of 7–9th abdominal tergites with almost angulate hind corner, and operculum with practically round apex (Fig. 5).

Male. General structure and coloration (Fig. 1) similar to those of female, but head 1.3–1.4 times as long as wide, area between lateral ocelli slightly more concave, antennae slightly longer than body and with small differences in coloration (13th and 20th segments completely light; 14th, 16th, and 18th segments with only darkened apex; 15th, 17th, and 20th segments darkened with only light base; 19th, 21th, 23th, and short 24th segments completely darkened), pronotum hardly shorter than head, mesonotum 1.2–1.3 times as long as pronotum and hardly longer than metanotum with 1st abdominal tergite, rudiments of tegmina hardly larger, traces of fusion of metanotum and 1st abdominal tergite slightly more distinct, legs somewhat longer (fore femora almost 3 times as long as pronotum in male, and about 2.5 times, in female), and lateral lobes of 7–9th abdominal tergites with more or less rounded hind corner (Fig. 6). Abdomen strongly dorsoventral



Figs 2–11. *Autolyca* Stål, details: 2–9 — *A. elena* sp.n. (2–4 — holotype); 10–11 — *A. pallidicornis*; 2, 6 — apex of abdomen; 3 — distal part of 10th abdominal tergite; 4–5, 10–11 — distal part of operculum; 7 — 10th abdominal tergite; 8 — genital plate without proximal part; 9 — vomer; 2–5, 10–11 — female; 6–9 — male; 2, 6 — lateral view; 3, 7 — dorsal view; 4–5, 8–11 — ventral view. Abbreviations: IX, X — 9th and 10th abdominal tergites; c — cerci; g — genital plate; o — operculum. Orig. pic. by A.V. Gorochov.

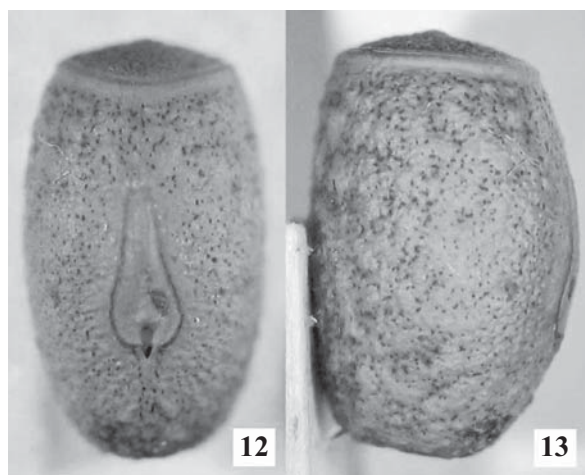
Рис. 2–11. *Autolyca* Stål, детали строения: 2–9 — *A. elena* sp.n. (2–4 — голотип); 10–11 — *A. pallidicornis*; 2, 6 — вершина брюшка; 3 — дистальная часть 10-го тергита брюшка; 4–5, 10–11 — дистальная часть оперкулюма; 7 — 10-й тергит брюшка; 8 — генитальная пластинка без проксимальной части; 9 — вумер; 2–5, 10–11 — самка; 6–9 — самец; 2, 6 — сбоку; 3, 7 — сверху; 4–5, 8–11 — снизу. Сокращения: IX, X — 9-й и 10-й тергиты брюшка; c — церки; g — генитальная пластинка; o — оперкулюм. Ориг. рис. А.В. Горехова.

trally flattened in region of base of 8th segment, and strongly inflated distally; hind lobes of 9th abdominal tergite large and moderately wide (Fig. 6); 10th abdominal tergite with characteristic hind median notch and a pair of weak concavities near it (on dorsal surface) (Fig. 7); cerci rather long and thin, but with strongly widened basal part (Fig. 6); genital plate distinctly divided into short proximal and longer distal areas, high and widened in middle part, narrowing to tubercle-like apex, and with arched upper edges in profile (Figs 6, 8); vomer heavily sclerotized, almost triangular, but with narrow middle part (Fig. 9).

Egg. Structure of egg very similar to that of *A. daemonia* Zompro et Hennemann, 2001 [Conle & Hennemann, 2002: Figs 141, 142], but micropylar square slightly longer (Figs 12–13).

Length (in mm). Body: ♀ 50–70, ♂ 50–55; pronotum: ♀ 7–7.8, ♂ 5.5–5.8; mesonotum: ♀ 8–9, ♂ 6.8–7.5; metanotum and 1st abdominal tergite together: ♀ 7.5–8.5, ♂ 6.5–7.2; fore femora: ♀ 17–19, ♂ 17–19; fore tibiae: ♀ 20–22; ♂ 20–22; middle femora: ♀ 15.5–17, ♂ 14–16; middle tibiae: ♀ 17–18.5, ♂ 16.5–17.5; hind femora: ♀ 20–22, ♂ 19–21; hind tibiae: ♀ 23–25, ♂ 22–24; egg 5–5.2.

COMPARISON. The new species is most similar to *A. pallidicornis* Stål from Guatemala, but distinguished by the more spotted distal half of antennal flagellum, shape of female operculum which is with rounded or roundly truncate apex (in *A. pallidicornis*, it is with angular apex; for comparison see Figs 4–5 and 10–11), somewhat wider and narrowly rounded hind lobes of 9th abdominal tergite of male, strongly widened base of male cerci, arched upper edges of male



Figs 12–13. Egg of *Autolyca elena* sp.n.: 12 — surface with micropyle; 13 — lateral view. Photo by A.V. Gorochov.

Рис. 12–13. Яйцо *Autolyca elena* sp.n.: 12 — поверхность с микропиле; 13 — вид сбоку. Фото А.В. Горехова.

genital plate, and characteristic tubercle-like apex of this plate. From *A. daemonia* (El Salvador), *A. elena* sp.n. differs in the not spotted proximal half of antennal flagellum and structure of the above-mentioned body parts which are similar in *A. daemonia* and *A. pallidicornis*. From *A. herculeana*



Fig. 14. Type locality of *Autolyca elena* sp.n. Photo by M.V. Berezin

Рис. 14. Типовое местообитание *Autolyca elena* sp.n. Фото М.В. Березина.

Conle et Hennemann (El Salvador), the new species is distinguished by the darker coloration with uniformly light proximal half of antennal flagellum, distinctly longer legs, wider base of male cerci, and thinner and longer distal half of these cerci and hind lobes of 9th abdominal tergite in male. From *A. punctata* Conle et Hennemann (El Salvador), *A. elena* differs in the uniformly black body.

ETYMOLOGY. The species is named after Elena Tkatsheva, one of its collectors.

NOTE. All specimens were collected at daytime in the mountain tropical forest with presence of *Quercus* on slopes along banks of river (Fig. 14). They sat on bushes and died tree trunks not very far from the ground and were very perceptible. It is possible, their males imitated large wasps of the family Pompillidae — they slightly trembled and lifted their abdominal apex upwards. In disturbance, they strongly rocked and excreted secretion with strong smell. Two pairs were in copula.

ACKNOWLEDGEMENTS. Field work of the collectors of this species in Southern Chiapas was organized with help of Dr. Sergej Sedov (Instituto de Geología, Universidad Nacional Autónoma de México), Dr. Ricardo Ayala Barajas (Instituto de Biología, Universidad Nacional Autónoma de México), and the following colleagues from Chiapas (El Colegio de la Frontera Sur, Tapachula): Dr. Rémy Vandame, Dr. Mikhail Sokolov, Miguel Ángel Guzmán Díaz, Carlos Balboa Aguilar, and Jorge Alfredo Mérida Rivas. For this and some other help in field, we thank all these colleagues as well as Don Humberto

Roblero Zunun (Ejido Las Golondrinas, Acacoyagua, Chiapas). We are also grateful to Dr. Oscar Conle (Munich Entomological Society) for his consultations and Elena Tkatsheva (Moscow Zoo) for her big help during this field work and preparation of this paper. The investigation is supported by the Russian Foundation for Basic Research (no. 07–04–00540) and mainly based on collections of the Zoological Institute of RAS, which obtain financial support from Ministry of Education and Science of RF (no. 2–2.20).

References

- Brock P.D. 2007. Phasmida Species File Online. <http://phasmida.orthoptera.org/HomePage.aspx>
- Conle O.V. & Hennemann F.H. 2002. Revision neotropischer Phasmatodea: Die Tribus Anisomorphini sensu Bradley & Galil 1977 (Insecta, Phasmatodea, Pseudophasmatidae) // Spixiana. Suppl.28. P.1–141.
- Gorochov A.V. 2001. On the higher classification of the Polyneoptera (short course) // Acta Geologica Leopoldensia. Vol.24. Nos 52/53. P.11–56.
- Gorochov A.V. 2002. On the systematic position of stick-insects (Phasmatoptera) from Baltic amber // XII Congress Russian Entomol. Soc. Abstracts. St.-Petersburg. P.86.
- Gorochov A.V. & Rasnitsyn A.P. 2002. 2.2.2.3. Superorder Gryllidea Laicharting, 1781 (=Orthopteroidea Handlirsch, 1903) // A.P. Rasnitsyn & D.L.J. Quicke (eds.) History of insects. Dordrecht, Boston, London. P.293–303 (+ Figs 430–464 on P.304–316 and references on P.447–493).