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New species and new records of South and North American tiger beetles (Coleoptera: Cicindelidae)

Новый вид и новые находки южно- и североамериканских жуков скакунов (Coleoptera: Cicindelidae)

Andrey V. Matalin[1,2]
А.В. Маталин[1,2]

[1] Moscow State Pedagogical University, Education-Scientific Centre of Ecology & Biodiversity, Kibalchicha str. 6, build. 3, 129164, Moscow, Russia. E-mail: andrei-matalin@yandex.ru

[1] Московский педагогический государственный университет, Учебно-научный центр экологии и биоразнообразия, ул. Кибальчича, д. 6, корп. 3, 129164 Москва, Россия.

[2] Pirogov Russian National Research Medical University, Pediatric Faculty, Department of Biology, Ostrovitianova str. 1, 117997 Moscow, Russia.

[2] Российский национальный исследовательский медицинский университет им. Н.И. Пирогова, педиатрический факультет, кафедра биологии, ул. Островитянова, д. 1, Москва 117997, Россия.

KEY WORDS. Taxonomy, fauna, tiger beetles, new species, new records, Argentina, Paraguay, Peru, USA.

КЛЮЧЕВЫЕ СЛОВА. Таксономия, фауна, жуки скакуны, новый вид, новые находки, Аргентина, Парагвай, Перу, США.

ABSTRACT. New records of tiger beetles (Coleoptera, Cicindelidae) from different regions of South and North America are presented and discussed. *Iresia* (*Palaeoiresia*) *petrovi* **sp.n.** is described from the Peruvian Region of Junin. *Tetracha lafertei* Thomson, 1857 is recorded for the first time from Argentina. *Odontocheila emilerivalieri* Moravec, 2016 and *O. bipunctata* (Fabricius, 1792) are recorded from Peru for the first time. Some new regional records are also given: two species in the Peruvian Province of Satipo, one subspecies each in the Provinces of Oxapampa and Atalaya, one species in the Paraguayan Department of Cordillera, and one subspecies in the state of Texas (USA). The external features, as well as the basic measurements of the male of *Langea mellicollis* Sumlin, 1993 are presented for the first time.

РЕЗЮМЕ. Приводятся и обсуждаются новые находки жуков скакунов (Coleoptera, Cicindelidae) из различных регионов Южной и Северной Америки. Из перуанского региона Хунин описан *Iresia* (*Palaeoiresia*) *petrovi* **sp.n.** *Tetracha lafertei* Thomson, 1857 впервые отмечен в Аргентине, а *Odontocheila emilerivalieri* Moravec, 2016 и *O. bipunctata* (Fabricius, 1792) — в Перу. Отдельные виды и подвиды впервые отмечены в перуанских провинциях Сатипо — два вида, Оксапампа — один подвид и Аталайа — один подвид; в парагвайском департаменте Кордильера — один вид; в штате Техас, США — один подвид. Впервые иллюстрируются черты строения самца *Langea mellicollis* Sumlin, 1993, а также приводятся его линейные размеры.

Introduction

According to the most recent catalogue of the tiger beetles (Coleoptera, Cicindelidae), this family has 2897 species [Wiesner, 2020]. In the subsequent three years additional new species were described, and numerous species were recorded for the first time in different regions of the world. As of 2021 in the Nearctic region 201 species had been recorded, and in the Neotropical region 517 species were known. Thus, the Neotropical region ranks third after Southeast Asia (685 species) and Africa (546 species) in the species richness of this family [Pearson, Wiesner, 2023]. In this current paper we list and discuss new records of tiger beetles from different South and North American countries and describe one new species.

Material and methods

The specimens studied below are housed in the public collections of the Zoological Institute of the Russian Academy of Sciences, St. Petersburg, Russia (ZIN), of the Moscow State Pedagogical University, Moscow, Russia (MSPU) and of the Siberian Zoological Museum, Novosibirsk, Russia (SZM).

The measurements were made with an ocular-micrometre on stereoscopic microscope Leica M165c (Carl

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Zeiss) as follows: TL — total body length without labrum (from anterior margin of clypeus to the elytral apex along the suture), HW — wide of head (in widest place), OW — wide of orbital plates (in widest place), LL — length of labrum with apical teeth (along the midline), LW — width of labrum (in the widest place), PL — length of pronotum (along the midline), PW — width of pronotum (in the widest place), EL — length of elytra (from the base of scutellum to the apex along the suture), EW — width of elytra (in the widest place), AL — length of aedeagus (from the base to the apex).

The images of habitus and details of studied species were taken with a Canon EOS 40D camera with a MP-E 65 mm macro lens. All photos were processed using Zerene Stacker software. For preparing the slide the aedeagus was consistently stand in 10% KOH (24 h.), 4% acetic acid (5 min.) and cold water (5 min.), and then was preserved with Euparal (D~1.05) media.

Taxonomy

Tetracha (s. str.) *lafertei* Thomson, 1857

MATERIAL. 1♂2♀♀ — Argentina, Misiones Province, Iguazu, 27.XI.2008, leg. local collector (MSPU).

NOTES. Until now this species was known only from the Brazilian States of Pará, Santa Catarina, and São Paolo [Naviaux, 2007; Erwin, Pearson, 2008; Wiesner, 2020] as well as from the Paraguayan Departments of Amambay, Concepción, Misiones, and Guairá [Sawada, Wiesner, 2000; Naviaux, 2007; Wiesner, 2020]. In Argentina *T. lafertei* is recorded for the first time.

Tetracha (*Neotetracha*) *lucifera lucifera* (Erichson, 1847)

MATERIAL. 1♂ — Peru, Atalaya Prov., 10 km NWW Atalaya, near Sapani vill., h = 360 m, 10°41´58.1´´S 73°52´10.9´´W, 29.01–02.02.2016, leg. A.V. Korshunov (MSPU).

NOTES. This subspecies was known previously in Peru only from the Departments of Cuzco and Madre de Dios [Naviaux, 2007; Wiesner, 2020].

Odontocheila emilerivalieri Moravec, 2016

MATERIAL. 1♀ — N Peru, Iquitos env., II–III.2004, leg. local collector; 3♂♂1♀ — N Peru, Loreto Reg., 60 km SW of Iquitos, Itaya River, h ~ 1200 m, 6–9.II.2005, leg. O. Mosolov; 1♂ — Peru, Iquitos env., Amazon River, 5–10.II.2005, leg. O. Mosolov; 1♂ — N Peru, Loreto Reg., Iquitos env., 8.I.2011, leg. A. Petrov (all MSPU).

NOTES. This species was originally described from the area of Manicoré town on the Madeira River within the Manicoré Biological Reserve in the Brazilian State of Amazonas [Moravec, 2016], and until now it was known only from the type-locality [Morvaec, 2018; Wiesner, 2020]. From other species of the *cajennensis* species-group *O. emilerivalieri* is easily recognised by the complex of following features — completely testaceous labrum as well as metatibiae and metatarsi, bright iridescent green sublateral margins of elytra, entirely black femora and abdominal sternites. This new record from Peru indicates a more widespread distribution of this species in the Amazon basin.

Odontocheila bipunctata (Fabricius, 1792)

MATERIAL. 1♂2♀♀ — Peru, Huánuco Reg., Tingo Maria env., 1–3.VII.1992, leg. local collector (MSPU).

NOTES. Until now this species was known from Trinidad, Surinam, Guyana, Colombia, Venezuela, and the Brazilian States of Pará and Amazonas [Moravec, 2016, 2018; Wiesner, 2020]. From other species of the *cajennensis* species-group *O. bipunctata* is distinguished by the testaceous abdomen, hind tibia and tarsi as well as basal third or half of fore-tibiae and especially mid-tibiae [Moravec, 2016, 2018]. In Peru *O. bipunctata* is recorded for the first time.

Odontocheila chrysis (Fabricius, 1801)

MATERIAL. 1♂1♀ — Paraguay, Cordillera, Pirareta, 25°29´S 56°56´W, 13–18.02.2012, leg. U. Drechsei (SZM).

NOTES. This species, one of the most common in the genus *Odontocheila*, is distributed from Colombia, Surinam, Guyana, and French Guiana through Brazil, Peru, and Bolivia to Paraguay and northern Argentina [Moravec, 2018; Wiesner, 2020]. In Paraguay it is found in Amambay, Boquerón, Caazapá, Canindeyú, Central, Concepción, Guairá, Itapúa, Presidente Hayes and San Pedro Departments [Sawada, Wiesner, 2000]. This specimen represents the first record of *O chyrysis* for Cordillera Department.

Pseudoxycheila aymara Cassola, 1997

MATERIAL. 1♂ — Peru, Satipo env., 600 km E of Lima, II.2004, leg. local collector; 1♂ — Peru, Junin Reg., Satipo Prov., Calabaza env., 11°30.551´S 74°49.782´W, 18–22.V.2015, leg. A. Sokolov; 1♂2♀♀ — Peru, Pasco Reg., Oxapampa Prov., Pozuzo vill., II–III.2015, leg. D. Quispe; 2♂♂1♀ — *ibid*, 15.XII.2016, leg. A. Sokolov; 1♂ — Peru, Pasco Reg., Oxapampa Prov., 5 km E of Santa Rosa, h = 1500 m, 11°00´23´´S 76°27´36´´W, 07.XII.2017, leg. A. Sokolov (all MSPU).

NOTES. This species was described from La Merced, Rio Toro in the Peruvian Region of Junin (Onín in original description) [Cassola, 1997; Wiesner, 2020]. Thus, these new records from the Pasco Department, which is adjacent to the Junin Dpartment, are not unexpected.

Pseudoxycheila lateguttata peruviana Cassola, 1997

MATERIAL. 1♀ — Peru, Huánuco Reg., 75 km from Huánuco, Carpish Pass, h = 2400 m, 09°41.55´S 76°05.1647´W, 04.IV.2012, leg. A. Petrov; 1♀ — Peru, Junin Reg., Satipo Prov., near Rio Venado, 12.XII.2013, leg. A. Sokolov; 2♂♂1♀ — Peru, Junin Reg., Satipo Prov., Calabaza env., 11°30.551´S 74°49.782´W, 18–22.V.2015, leg. A. Sokolov (all MSPU).

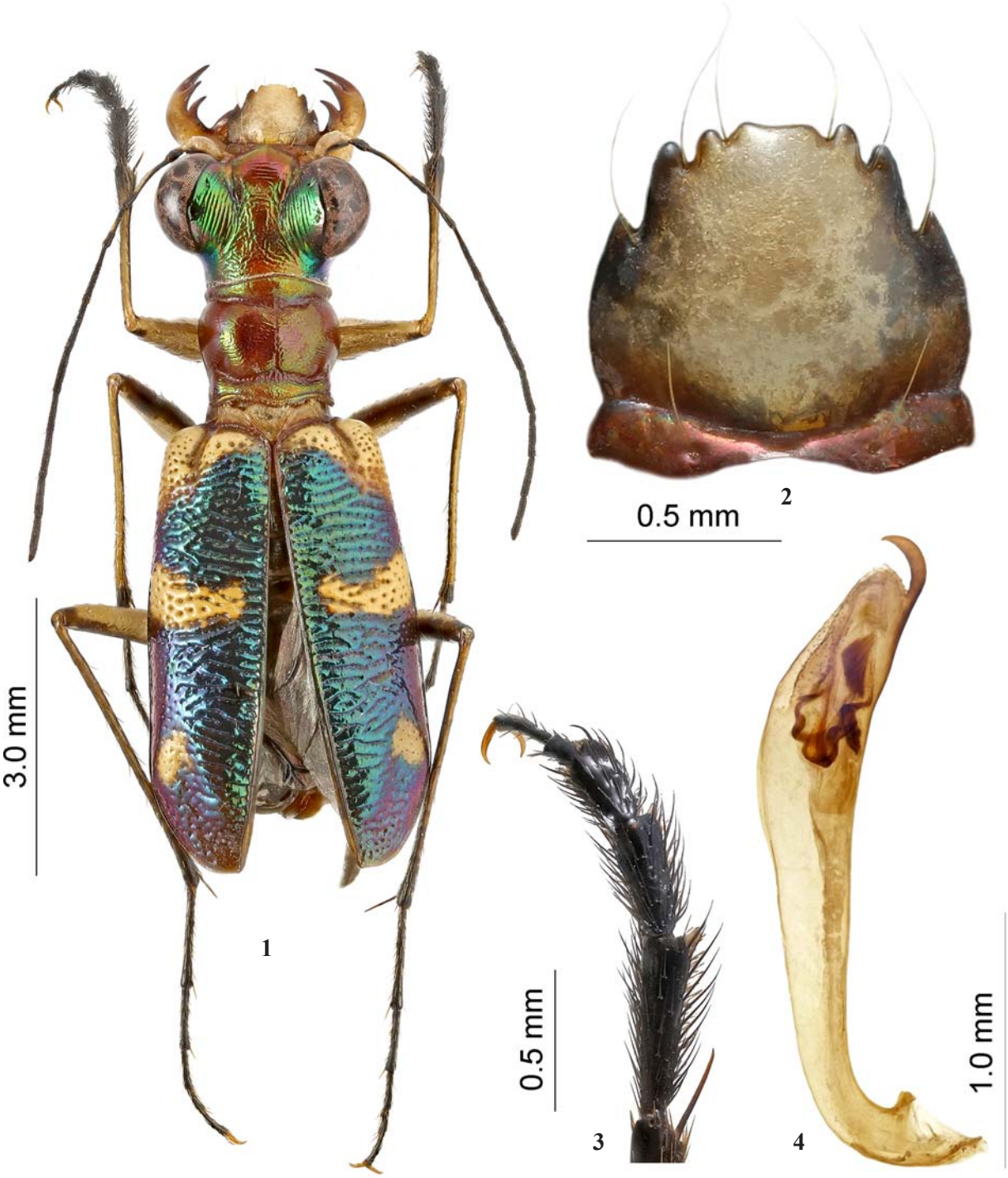
NOTES. This subspecies is immediately distinguished by the shape of aedeagus with elongated, slightly curved downwards and spatulated flat apex as well as by its large, rounded yellow-orange elytral spots [Cassola, 1977]. Additionally, anterior margins of abdominal sternites 4–6 with three–four, three–six and two–four pair of setae, respectively [our data]. Until now this subspecies was known from Ecuadorian Province Napo [Erwin, Pearson, 2008] as well as from Peruvian departments of Amazonas, Huánuco, and Cusco [Cassola, 1997; Bustamante et al., 2018]. These specimens represent the first record from the Peruvian Department of Junin.

Langea mellicollis Sumlin, 1993
Figs 1–4.

MATERIAL. 1♂ — Peru, Junin Reg., Satipo Prov., near Rio Venado vill., h = 1122 m, 11°11.787´S 74°46.168´W, 20–30.10.2022, leg. A. Sokolov (MSPU).

NOTES. This species was described from a single female from Manu Biosphere Reserve, Pakitza Park Ranger Post in the Peruvian Department of Madre de Dios [Sumlin, 1993]. Until now in Peru *L. mellicollis* was known only from mentioned above locality [Sumlin, 1993; Pearson, Huber, 1994; Erwin, Pearson, 2008]. The main measurements of the holotype (female) are — TL = 7.7 mm, EW = 2.6 mm [Sumlin,

1993], and in collected early female TL = 9.0 mm [Erwin, 1990; Erwin, Pearson, 2008: Pl. 22]. In addition, this species was found in the Colombian Department of Amazonas (according to the map — in Tarapacá Municipality) without sex and number mentions, but with the range of TL = 7.0–8.5 mm [Vítolo, Pearson, 2003; Vítolo, 2004]. The information on morphology of the male is still absent [Sumlin, 1993; Pearson, Huber, 1994; Erwin, Pearson, 2008]. Thus, in the Peruvian Region of Junin *L. mellicollis* is recorded for the first time. Moreover, the male of this species is also illustrated for the first time (Figs 1–4). Its main measurements are (in mm) — TL = 7.9, HW = 2.4, OW = 1.5, LL = 0.8, LW = 1.0, PL = 1.4, PW = 1.5, EL = 5.0, EW = 2.6, AL = 2.5. Labrum pale with light brown lateral and basal margins, six teeth and relatively broad and flat apical portion, as well as six long marginal setae (Fig. 2). Three basal tarsomeres of fore legs are very wide and densely haired by long black setae (Figs 1, 3). Aedeagus with very large, curved ventrally hook (Fig. 4).

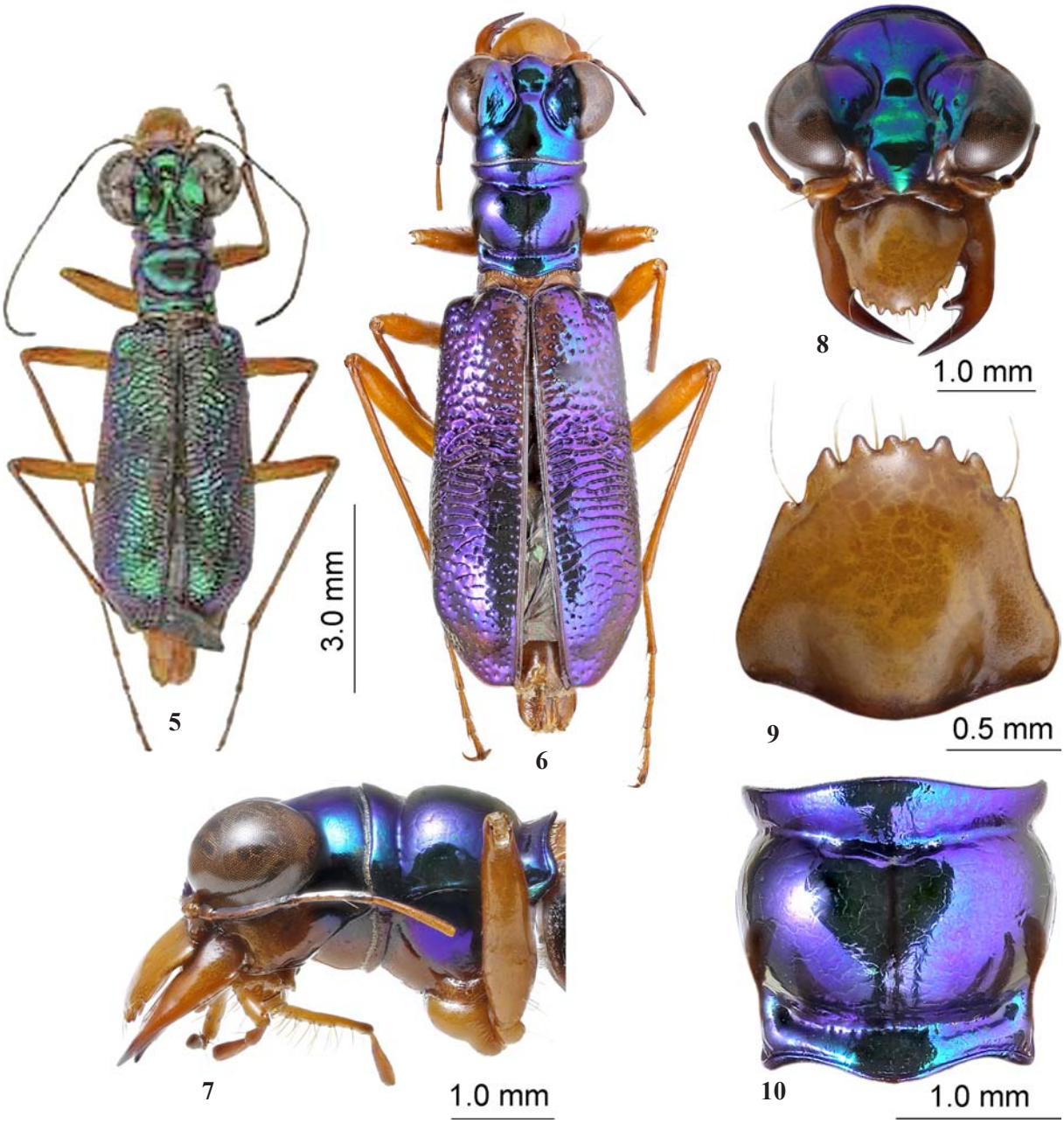


Figs 1–4. *Langea mellicollis*, male: 1 — habitus, dorsal view; 2 — labrum; 3 — left fore-tarsus; 4 — aedeagus, left lateral view.
Рис. 1–4. *Langea mellicollis*, самец: 1 — внешний вид, сверху; 2 — верхняя губа; 3 — левая передняя лапка; 4 — эдеагус, слева.

Iresia (*Palaeoiresia*) *petrovi* Matalin, **sp.n.**
Figs 6–10.

TYPE MATERIAL. Holotype, ♀ (without 6–11 left and 4–11 right antennomeres, both left and right fore-tibia and fore-tarsi, apical third of left tibia, and left tarsus) — Peru, Junin Reg., Rio Perene, Santa Cruz vill., h = 1200 m, 1–11.01.2006, leg. A. Petrov (ZIN).

DIAGNOSIS. This new species is related to *I. surinamensis* Chaudoir, 1862, *I. psyche* Sumlin, 1994, *I. phaedra* Sumlin, 1999, and *I. opalescens* Sumlin, 1999, but recognised by the following features. *Iresia petrovi* **sp.n.** has transverse labrum (LW/LL = 1.17) and slightly transverse pronotum (PW/PL = 1.05) *vs.* in all mentioned above species both labrum and pronotum are approximately as long as wide [Sumlin, 1994, 1999]. On the colouration this new species is similar with *I. surinamensis*. However, in *I. petrovi* **sp.n.** head blue–bluish-green, pronotum and elytra blue-violet (Fig. 6) *vs.* green head and green with bluish lateral margin of elytra in *I. surinamensis* [Chaudoir, 1862; Fig. 5]. Moreover, the main proportions are also different: OW/HW = 0.63 and PW/HW = 0.74 in new species *vs.* OW/HW = 0.50–0.52 and PW/HW = 0.60–0.65 in *I. surinamensis* (Table). In *I. psyche* and *I. phaedra* antennomeres 5–11 black *vs.* yellow in *I. petrovi* **sp.n.** (at least antennomere 5). Additionally, in *I. psyche* and *I. opalescens* frons pale, and pronotum black *vs.*



Figs 5–10. *Iresia* (*Palaeoiresia*) spp., females. 5 — *I. surinamensis* [after Cassola, 2011]; 6–10 — *I. petrovi* **sp.n.**, holotype; 5–6 — habitus, dorsal view; 7 — head and pronotum, left lateral view; 8 — head, frontal view; 9 — labrum; 10 — pronotum.

Рис. 5–10. *Iresia* (*Palaeoiresia*) spp., самки. 5 — *I. surinamensis* [по Cassola, 2011]; 6–10 — *I. petrovi* **sp.n.**, голотип; 5–6 — внешний вид, сверху; 7 — голова и переднеспинка, слева; 8 — голова, спереди; 9 — верхняя губа; 10 — переднеспинка.

Table. Size (in mm) and selected body ratios in five *Iresia* species.
Таблица. Размеры (в мм) и пропорции тела видов *Iresia*.

Species	Sex	TL	EW	OW/HW	PW/HW
*I. opalescens***	1♀	8.1	2.4	0.64	0.73
I. petrovi **sp.n.**	1♀	10.2	3.2	0.63	0.74
*I. phaedra***	1♂	7.8	2.3	0.32	0.74
*I. psyche**	1♀	7.3	2.2	0.58	0.68
*I. surinamensis**	3♀♀	7.7–7.8	2.5	0.50–0.52	0.6–0.65

* — after Sumlin [1994]; ** — after Sumlin [1999].
* — по Sumlin [1994]; ** — по Sumlin [1999].

metallic blue – bluish-green frons and blue pronotum in *I. petrovi* **sp.n.** Moreover, in *I. psyche* and *I. phaedra* elytra lacking brownish basal area *vs.* elytra with light brown basal area in a new species. Finally, *I. petrovi* **sp.n.** is distinguished from the mentioned above species by the size and/or by the body ratios (Table).

DESCRIPTION. TL = 10.2 mm. Head smooth and glabrous, metallic blue with light golden lustre, varying the colour on bluish-green with the angle of the light; clypeus, area directly above antennae, as well as gula and anterior two thirds of genae pale; clypeus with two long setae; genae smooth and glabrous; frons with deep and wide cavity posteriorly thus anterior edge of occiput clearly elevated; mentum with small tooth. Eyes medium-sized, globose, HW = 2.7 mm, OW = 1.7 mm, each supra-orbital plate with six indistinct striae and long seta in anterior third; interocular grooves very deep and semi-circular (Fig. 6). Labrum completely pale, transverse, LL = 1.2 mm, LW = 1.4 mm, with eight teeth and seven marginal setae (Figs 8–9). Mandibles light brown with brown inner teeth and apical molar. Labial and maxillary palpi pale, except slightly dark apical palpomeres. Scape testaceous on anterior surface, brown on posterior one, with a single long subapical seta; pedicel brown with lighter apex; left antennomeres 3 and 4 as well as right antennomere 3 brown along anterior surface in basal two thirds, dark brown in other portions; left antennomere 5 completely pale, densely covered by numerous, short yellow hairs in apical half (Figs 6–7).

Pronotum smooth and glabrous, slightly transverse, PL = 1.9 mm, PW = 2.0 mm, metallic blue-violet, posterior lobe with distinct greenish reflection; anterior and posterior transverse grooves very deep; midline very thin and shallow (Figs 6, 10). Proepisternum glabrous, metallic violet with greenish lustre along top margin; thoracic segments pale except dark violet mesepisternum and light brown metepisternum. Legs pale, except light brown apices of hind tarsomeres 5 and apices of claws; fore- and mid-trochanters with a single apical seta; hind coxae with one basal and one apical seta.

Elytra elongate, indistinctly dilated towards apex; EL = 6.4 mm, EW = 3.2 mm; blue-violet with light greenish reflection in humeral portion, and small brownish triangular subsutural area under pale scutellum; epipleura dark violet; apical margins gradually rounded, with short straight apices; sutural spine very small. Elytral sculpture presented by medium-sized, deep dense-placed pits in basal third, deep transverse, irregular coarse rugae in middle part, and numerous, shallow pits in apical third (Fig. 6).

Abdominal sternites pale, sternites 3–5 with two setae near anterior margin; sternite 6 densely haired along anterior margin.

Male unknown.

ETYMOLOGY. The new species honours my good friend, the Russian entomologist, Alexander Petrov who collected the holotype.

NOTES. At present time *Iresia* Dejean, 1831 contains 14 arboreal species distributed in the Central and South America [Sumlin, 1994, 1999; Erwin, Pearson, 2008; Wiesner, 2020]. Among them ten species belong to subgenus *Palaeoiresia* Sumlin, 1994, and a half of them are known only by a type specimen or by the brief series in two–three specimens, in most cases by the females [Sumlin, 1994, 1999]. Thus, the ranges of variability in the size and body ratios in these species are still unclear.

Cicindela (s. str.) *limbata limbata* Say, 1823

MATERIAL. 2♂♂ — USA, Texas, Cooke County, 10.5 mi NE St. Jo, 20.09.1998, leg. Walter Johnson (MSPU).

NOTES. *Cicindela limbata* has a fragmented distribution area and is separated inti five subspecies [Johnson, 1989; Pearson et al., 2006, 2015]. The nominotypical subspecies inhabits dry sandy areas in south-eastern Wyoming [Vaurie, 1950], southern South Dakota [Kirk, Balsbaugh, 1975], Nebraska [Carter, 1989], north-eastern Colorado [Kippenhan, 1990, 1994] and probably occurs in Kansas [Bousquet, 2012]. In Texas *C. l. limbata* is recorded for the first time. It should be noted that there is an inaccuracy in the label. St. Jo is placed in Montague County which is adjacent to Cooke County.

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