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A progress study of the Odonata from Azerbaijan in summer 2019

Nataly Yu. Snegovaya

Zoological Institute NAS of Azerbaijan, proezd 1128, kvartal 504, Baku, AZ 1073, Azerbaijan. Email: snegovaya@yahoo.com

Abstract

This paper presents the results of a study conducted on the odonate fauna of Azerbaijan covering 15 localities in seven districts (Guba, Khachmaz, Goygol, Samukh, Gusar, Siyazan, Shabran). A total of 36 species was recorded.

Key words: Odonata, fauna, Azerbaijan, *Lestes macrostigma*, *Ischnura fountaineae*, *Coenagrion scitulum*, *Lindenia tetraphylla*, *Sympetrum vulgatum*

Introduction

Very few notes on the odonate fauna of the Azerbaijan territory have been published in the 19th century (Selys-Longchamps 1887: from Lankaran, and Kolenati 1846 from Kura-River, partly running in Province Elisabethopol). Few studies on the odonate fauna of Azerbaijan (see for details Skvortsov & Snegovaya 2015) had been published in the 20th century; among them are Akramowski (1948), Bartenev (1910, 1912) and Bogachev (1937, 1951). Most progress in study of Azerbaijan odonate fauna was made after 2000: Dumont (2004), Skvortsov & Snegovaya (2014, 2015), Guliyeva & Aliyev (2015), Durand (2019) and Snegovaya (2019) increased the knowledge about the dragonfly fauna significantly.

From the 70 administrative districts (rayonlar) in Azerbaijan after 2000 24 districts (Aghjabadi, Agstafa, Agsu, Baku (city), Balakan, Shabran, Gadabay, Goygol, Hajigabul, Imishli, Ismailli, Kurdamir, Lankaran, Masally, Neftchala, Guba, Gusar, Salyan, Shamakhi, Samukh, Siyazan, Khachmaz, Yardymli, Yevlakh) are covered by dragonfly research activities, and additionally all districts of the Nakhichevan Autonomic Republic (Fig. 1). Significant parts of the country still remain unstudied.

In most cases within a district only a few localities had been studied. In 2019, a further study (yellow districts in Fig. 1) was conducted. The results of this study are presented here.

Material and Methods

Sampling sites

Collection of odonate specimens was carried out – partly only occasionally - between 10-VI and 25-VIII, while the focus time was in July 2019, where habitats were studied. The following materials also include unpublished collections that were made earlier (2016 - 2018) at some of the localities studied in 2019.

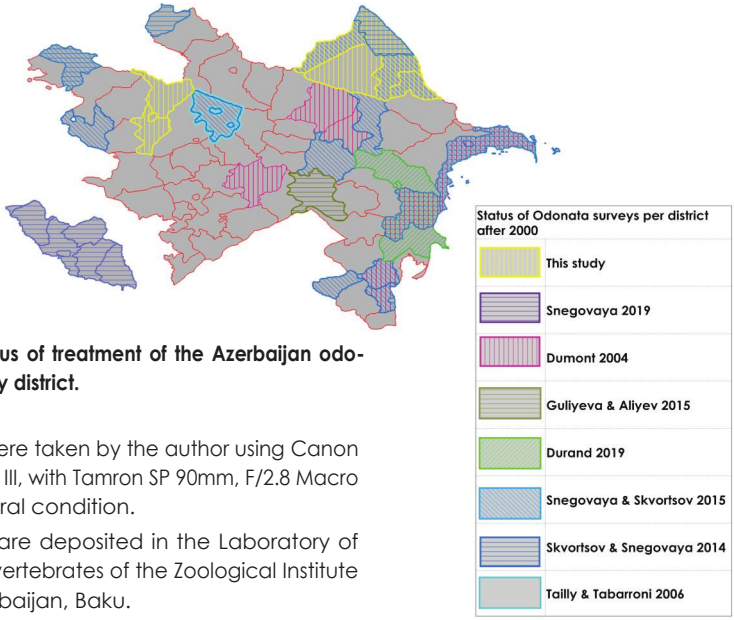

Figure 1. Status of treatment of the Azerbaijan odonate fauna by district.

All photos were taken by the author using Canon EOS 5D Mark III, with Tamron SP 90mm, F/2.8 Macro lens, in natural condition.

Specimens are deposited in the Laboratory of Terrestrial Invertebrates of the Zoological Institute NAS of Azerbaijan, Baku.

Figure 2. Map of localities.

Figure 3. Siyazan, near Caspian Sea coast, freshwater spills.

Figure 4. Siyazan, Galaalti, mixed forest and forest meadows along the road.

Figure 5. Siyazan, Galaalti, small pond in the forest.

Figure 6. Khachmaz, Nabran vill., coast, numerous spills on the shores of the Caspian Sea.

Figure 7. Khachmaz, Nabran vill., coast, numerous vegetation from various species of *Juncus* horsets, reeds (*Phragmites*), rush (Scirpus), cattail (*Thypa*) and saltwort (*Salsola* sp.).

Figure 8. Khachmaz, Nabran vill., flat forest with numerous small rivers and streams.

Figure 9. Khachmaz, Nabran vill., large glades in the forest.

Figure 10. Gusar district, along Gusarchay River, small spills along the river.

Localities

Localities can be taken from Figure 2 and are detailed in this chapter.

Loc. 1. Siyazan, near Caspian Sea coast, freshwater spills with sparse reeds (*Phragmites*) and *Juncus* horsets (N40°58'31.68"; E49°15'17.02"; -19 m a.s.l.) (Fig. 3).

Loc. 2. Siyazan, Galaalti, mixed forest and forest meadows along the road (N41°4'50.94"; E48°56'45.98"; 714 m a.s.l.) (Fig. 4).

Loc. 3. Siyazan, Galaalti, small pond in the forest (N41°5'54.42"; E48°55'54.7"; 626 m a.s.l.) (Fig. 5).

Loc. 4. Khachmaz, Nabran vill., coast, numerous spills on the shores of the Caspian Sea, small rivers flowing into the sea, numerous vegetation from various species of *Juncus* horsets, reeds (*Phragmites*), rush (*Scirpus*), cattail (*Typha*), saltwort (*Salsola* sp.) (N 41°46'5.3", E 48°41'27.2", -27 m a.s.l.) (Fig. 6-7).

Figure 11. Gusar district, along Gusarchay River, a small pond next near the river.

Figure 12. Gusar (Qusar) district, Laza vill., small pond on the way to the waterfall.

Loc. 5. Khachmaz, Nabran vill., lowland forest (relict liana forests) with numerous small rivers and streams, large glades in the forest (N 41°45'23.78", E 48°40'53.51"; -6 m a.s.l.) (Fig. 8-9).

Figure 13. Guba (Quba) district, Afurja vill., small ponds overgrown with rush (*Scirpus*), reeds (*Phragmites*), cattail (*Thypha*).

Figure 14. Guba (Quba) district, Afurdja vill., along Velvelechay River.

Figure 15. Samukh (Samux), bank of the Kura River, not far from the Yenikend reservoir.

Figure 16. A section of the Kura River between the Yenikend and Shamkir reservoirs, near Samed Vurgun settl.: a stream flowing between the area overgrown with trees (*Salix, Elaeagnus*); water spills in the grass.

Figure 17. A section of the Kura River between the Yenikend and Shamkir reservoirs, near Samed Vurgun settl.: plot near the banks of the Kura River.

Loc. 6. Gusar district, along Gusarchay River, small spills along the river bed, a small pond next near the river (N41°20'16.74"; E48°12'31.9"; 1084 m a.s.l.) (Fig. 10-11).

Loc. 7. Gusar (Qusar) district, Laza vill., small pond on the way to the waterfall (N41°17'43.92"; E48°6'56.78"; 1742 m a.s.l.) (Fig. 12).

Loc. 8. Guba (Quba) district, Afurja (Afurcə) vill., small ponds overgrown with rush (*Scirpus*) and cattail (*Typha*) (N41°09'07.0"; E48°36'25.5"; 883 m a.s.l.) (Fig. 13).

Loc. 9. Guba (Quba) district, Afurdja (Afurcə) vill., along Velvelechay (Vəlvələçay) River (N41°10'5.56"; E48°37.8'8.12"; 1101 m a.s.l.) (Fig. 14).

Figure 18. Goygol National park: Goygol (Göygöl) lake.

Figure 19. Goygol National park: Maralgol (Maralgöl) lake.

Loc. 10. Samukh (Samux), bank of the Kura River, not far from the Yenikend reservoir (N40°54'59.9"; E46°16'30.8"; 125 m a.s.l.) (Fig. 15).

Loc. 11. A section of the Kura River between the Yenikend and Shamkir reservoirs, near Samed Vurgun settl.: Small ponds; a stream flowing between the area overgrown

Figure 20. Goygol National park: Jamish (Camış) lake.

Figure 21. Shabran distr., Divichi estuary: areas with sandy dunes and horsets of *Juncus acutus* L., 1753 near the coast of the Caspian Sea.

with trees (*Salix, Elaeagnus*); water spills in the grass; plot near the banks of the Kura River (N40°56'1.5"; E46°11'45.99"; 123 m a.s.l.) (Fig. 16-17).

Loc. 12. Goygol distr., Goygol National park: Goygol (Göygöl) lake (N40°24'41.56"; E46°18'51.42"; 1778 m a.s.l.) (Fig. 18).

Figure 22. Shabran distr., Divichi estuary: reed channels.

Loc. 13. Goygol distr., Goygol National park: Maralgol (Maralgöl) lake (N40°22'43.36"; E46°18'46.26"; 1901 m a.s.l.) (Fig. 19).

Loc. 14. Goygol distr., Goygol National park: Jamish (Camış) lake (N40°23'5.85"; E46°18'38.25"; 1823 m a.s.l.) (Fig. 20).

Loc. 15. Shabran distr., Divichi estuary sites with sand dunes and thicket of bulrush near the Caspian coast; canals overgrown with reeds; areas with shallow ponds and dried out, densely covered with reeds (N41°13'43.15"; E49° 7'57.57"; -28m a.s.l.) (Fig. 21-22).

Results

Records from 36 species were made. These are specified in the following chapter.

Recorded species

Calopterygidae

Calopteryx splendens intermedia (Selys, 1887) (Figs. 23-24)

Loc. 4: 2-5.07.2019, 1♂; **Loc. 5**: 2-5.07.2019, 5♂♂, 3♀♀; **Loc. 11**: 23.07.2019, 2♂♂, 1♀.

Lestidae

Lestes dryas Kirby, 1890 (Figs. 25-26)

Loc. 3: 10-12.06.2019, 4♂♂, 2♀♀; **Loc. 8**: 8-11.07.2019, 7♂♂, 2♀♀.

Figure 23. ***Calopteryx splendens intermedia*****, group of males (Loc. 4).**

Figure 24. ***Calopteryx splendens intermedia*****, male (Loc. 5).**

Figure 25. ***Lestes dryas*****, male (Loc. 3).**

Figure 26. ***Lestes dryas*****, female (Loc. 3).**

Figure 27. ***Lestes virens*****, male (Loc. 8).**

Figure 28. ***Lestes barbarus*****, male (Loc. 1).**

Lestes virens Rambur, 1842 (Fig. 27)

Loc. 8: 8-11.07.2019, 7♂♂, 1♀.

Lestes barbarus (Fabricius, 1798) (Fig. 28)

Loc. 1: 03.08.2017, 1♂, 1♀, leg. I. Kerimova; 27.06.2018, 1♀, leg. I. Kerimova; 5.07.2019, 6♂♂, 2♀♀; **Loc. 8**. 8-11.07.2019, 1♂, 3♀♀; **Loc. 10**: 23.07.2019, 2♀♀; **Loc. 15**: 24-25.08.2017, 1♀, leg. I. Kerimova.

Lestes macrostigma Eversmann, 1836

Loc. 1: 23.07.2017, 1♂, 1♀, leg. I. Kerimova; 5.07.2019, 1♀.

Lestes sponsa Hansemann, 1823

Loc. **14**: 25.07.2019, 11♂♂, 4♀♀.

Sympecma fusca (Vander Linden, 1820)

Loc. 4: 2-5.07.2019, 3♂♂; **Loc. 5**: 2-5.07.2019, 1♂; **Loc. 8**: 8-11.07.2019, 2♂♂, 2♀♀.

Coenagrionidae

Ischnura pumilio (Charpentier, 1825) (Fig. 29)

Loc. 1: 23.07.2017, 3♂♂, 7♀♀, leg. I. Kerimova; 5.07.2019, 6♂♂, 2♀♀; **Loc. 6**: 03.07.2019, 1♀; **Loc. 7**: 03.07.2019, 2♂♂; **Loc. 8**: 8-11.07.2019, 2♂♂, 3♀♀; **Loc. 11**: 22.07.2019, 6 ♂♂; **Loc. 13**: 25.07.2019, 1♂.

Ischnura elegans (Vander Linden, 1820) (Fig. 30)

Loc. 1: 5.07.2019, 7♂♂, 13♀♀; 03.08.2019, 1♀; **Loc. 4**: 2-5.07.2019, 6♂♂, 3♀♀; **Loc. 10**: 23.07.2019, 3♂♂, 7♀♀; **Loc. 11**: 22.07.2019, 3♂♂, 4♀♀; **Loc. 15**: 19.07.2019, 1♂, 1♀.

Ischnura fountaineae Morton, 1905

Loc. 1: 23.07.2017, 10♂♂, 7♀♀, leg. I. Kerimova.

Coenagrion puella (Linnaeus, 1758) (Figs. 31-32)

Loc. 3: 10-12.06.2019, 5♂♂, 1♀; **Loc. 4**: 2-5.07.2019, 1♂; **Loc. 6**: 03.07.2019, 14♂♂, 3 ♀♀; **Loc. 7**: 03.07.2019, 7♂♂, 1♀; **Loc. 8**: 8-11.07.2019, 8♂♂, 2♀♀.

Figure 29. *Ischnura pumilio*, female (Loc. 8).

Figure 30. *Ischnura elegans*, male (Loc. 4)

Figure 31. *Coenagrion puella*, male (Loc. 7).

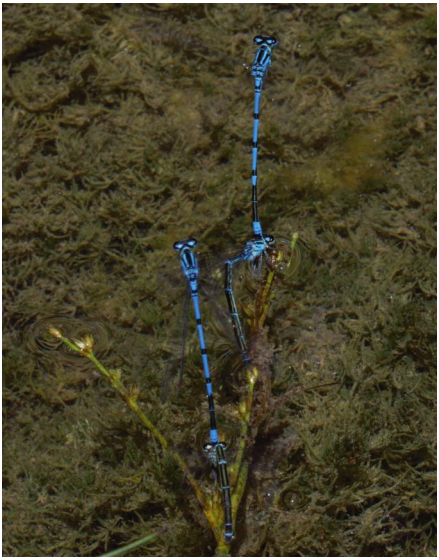

Figure 32. *Coenagrion puella*, copula (Loc. 7).

Figure 33. *Coenagrion scitulum*, male (Loc. 8).

Figure 34. *Enallagma cyathigerum*, male (Loc. 12)

Coenagrion scitulum (Rambur, 1842) (Fig. 33)

Loc. 8: 8-11.07.2019, 11♂♂, 1♀.

Enallagma cyathigerum (Charpentier, 1840) (Fig. 34)

Loc. 13: 15.08.2016, 5♂♂, 1♀, leg. I. Kerimova; 25.07.2019, 6♂♂, 1♀; **Loc. 14**: 25.07.2019, 7♂♂, 6♀♀.

Erythromma viridulum (Charpentier, 1840)

Loc. 4: 2-5.07.2019, 1♂.

Figure 35. *Platycnemis dealbata*, male (Loc. 11).

Fig. 36. *Platycnemis pennipes*, male (Loc. 4).

Platycnemididae

Platycnemis dealbata Selys in Selys and Hagen, 1850 (Fig. 35)

Loc. 4: 2-5. 07.2019, 7♂♂, 3♀♀; **Loc. 11**: 22.07.2019, 8♂♂, 3♀♀.

Platycnemis pennipes (Pallas, 1771) (Fig. 36)

Loc. 4: 2-5. 07.2019, 7♂♂, 4♀♀; **Loc. 5**: 2-5.07.2019, 1♂, 2♀♀.

Aeshnidae

Aeshna affinis Vander Linden, 1820

Loc. 2: 10-12.06.2019, 1♀; **Loc. 9**: 11.07.2019, 1♂, 1♀.

Anaciaeschna isoceles (Müller, 1764)

Loc. 4: 4.07.2019. Visual observation.

Anax imperator Leach, 1815

Loc. 2: 10-12.06.2019, 1♂; **Loc. 5**: 2-5. 07.2019, 1♀; **Loc. 13**: 15.08.2016, 1♂.

Anax parthenope (Selys, 1839)

Loc. 1: 03.08.2017, 1♂, 2♀♀, leg. I. Kerimova.

Figure 37. *Lindenia tetraphylla*, male (Loc. 4).

Gomphidae

Gomphus vulgatissimus (Linnaeus, 1758)

Loc. 5: 2-5.07.2019, 3♂♂, 1♀.

Lindenia tetraphylla (Vander Linden, 1825) (Fig. 37)

Loc. 1: 23.07.2017, 1♂, 3 ♀♀, leg. I. Kerimova; 24.07.2018, 1♀, leg. I. Kerimova; **Loc. 4**: 2-5.07.2019, 1♂, 1♀.

Figure 38. *Libellula depressa*, male (Loc. 3).

Figure 39. *Orthetrum coerulescens*, old female (Loc. 5).

Figure 40. *Orthetrum* brunneum, males (Loc. 4).

Figure 41. *Sympetrum sanguineum*, male (Loc. 14).

Libellulidae

Libellula depressa Linnaeus, 1758 (Fig. 38)

Loc. 3: 10-12.06.2019, 3♀; **Loc. 7**: 03.07.2019, 1♂.

Orthetrum cancellatum (Linnaeus, 1758)

Loc. 1: 27.06.2018, 3♂♂, 1♀, leg. I. Kerimova.

Orthetrum brunneum (Fonscolombe, 1837)

Loc. 1: 23.07.2017, ♀, leg. I. Kerimova; 03.08.2017, 7♂♂, 1♀, leg. I. Kerimova; 5.07.2019, 1♂, 1♀; **Loc. 3**: 10-11.06.2019, 1♂; **Loc. 4**: 2-5. 07.2019, 2♂♂, 1♀; **Loc. 5**: 2-5.07.2019, 1♂; **Loc. 6**: 03.07.2019, 2 ♂♂; **Loc. 9**: 11.07.2019, 2♂♂; **Loc. 15**: 24-25.08.2017, 1♀, leg. I. Kerimova; 19.07.2019, 1♂, 3♀♀.

Orthetrum coerulescens (Fabricius, 1798) (Figs. 39-40)

Loc. 4: 2-5.07.2019, 6♂♂, 4♀♀; **Loc. 5**: 2-5.07.2019, 6♂♂, 7♀♀; **Loc. 10**: 23.07.2019, 1♀; **Loc. 11**: 22.07.2019, 6♂♂, 2♀; **Loc. 15**: 24-25.08.2017, 1♀, leg. I. Kerimova; 19.07.2019, 2♂♂.

Orthetrum sabina (Drury, 1773)

Loc. 11: 23.07.2019, 1♀; **Loc. 15**: 19.07.2019, 1♂, 1♀.

Sympetrum flaveolum (Linnaeus, 1758)

Loc. 1: 23.07.2017, 1♀, leg. I. Kerimova; 03.08.2017, 2♂♂, leg. I. Kerimova; **Loc. 13**: 15.08.2016, 2♂♂, 2♀♀, leg. I. Kerimova; **Loc. 14**: 25.07.2019, 5♂♂; **Loc. 15**: 24-25.08.2017, 1♂, leg. I. Kerimova.

Sympetrum fonscolombii (Selys, 1840)

Loc. 1: 03.08.2017, 3♀♀, leg. I. Kerimova; 5.07.2019, 10♂♂, 6♀♀; **Loc. 7**: 03.07.2019, 1♂; **Loc. 8**: 8-11.07.2019, 3♂♂; **Loc. 11**: 23.07.2019, 1♀; **Loc. 15**: 19.07.2019, 2♂♂.

Sympetrum sanguineum (Muller, 1764) (Fig. 41)

Loc. 1: 5.07.2019, 1♀; **Loc. 3**; 10-12.06.2019, 1♂, 1♀; **Loc. 4**: 2-5.07.2019, 2♂♂; **Loc. 8**: 8-11.07.2019, 2♂♂, 1♀; **Loc. 14**: 25.07.2019, 1♂, 1♀.

Figure 42. Sympetrum striolatum, female (Loc. 1).

Figure 43. *Crocothemis erythraea*, male (Loc. 4).

Sympetrum meridionale (Selys, 1841)

Loc. 1: 03.08.2017, 2♀♀.

Sympetrum striolatum (Charpentier, 1840) (Fig. 42)

Loc. 1: 5.07.2019, 2♂♂, 1♀; **Loc. 3**: 10-12.06.2019, 3♂♂, 3♀♀; **Loc. 4**: 2-5. 07.2019, 1♂, 1♀; **Loc. 8**: 8-11.07.2019, 1♂; **Loc. 14**: 25.07.2019, 5♂♂, 2♀♀.

Sympetrum vulgatum Linnaeus, 1758

Loc. 13: 15.08.2016, 1♀, leg. I. Kerimova.

Crocothemis erythraea (Brullé, 1832) (Fig. 43)

Loc. 1: 5.07.2019, 1♂, 2♀♀; **Loc. 5**: 2-5.07.2019, 3♂♂, 1♀; **Loc. 10**: 23.07.2019, 1♂; **Loc. 15**: 19.07.2019, 2♀♀.

Selysiothemis nigra (Vander Linden, 1825)

Loc. 1: 23.07.2017, 1♂, leg. I. Kerimova; 24.07.2018, 2♂♂, leg. I. Kerimova; **Loc. 4**: 2-5.07.2019, 3♀♀; **Loc. 10**: 23.07.2019, 4♀♀; **Loc. 11**: 23.07.2019, 2♂♂, 1♀; **Loc. 15**: 24-25.08.2017, 5♂♂, 7♀♀, leg. I. Kerimova; 19.07.2019, 3♂♂, 4♀♀.

Pantala flavescens (Fabricius, 1798)

Loc. 1: 03.08.2017, 1♂, 1♀, leg. I. Kerimova.

Discussion

Below information on some rare species sampled during this study is provided.

Lestes macrostigma was recorded on the Caspian Sea coast in the Siyazan region. Prior, this species was recorded by Dumont (2004) in the Masally district and Durand (2019) in the Salyan district.

Ischnura fountaineae was found in the Absheron peninsular (Skvortsov & Snegovaya 2014) and in the vicinity of the Mingechevir water reservoir (Skvortsov & Snegovaya 2015), by Dumont (2004) in the Salyan district and Durand (2019) in the Salyan and Neftchala districts. Here, we document a record from the Caspian coast in the Siyazan district.

Coenagrion scitulum was recorded in the Shamakhy and Gadabay districts (Dumont 2004; Skvortsov & Snegovaya 2015). In this report we give a new locality for this species in the village Afurdja of the Guba district.

Lindenia tetraphylla was known from the Absheron peninsular (Dumont, 2004; Skvotsov & Snegovaya 2014) and the Yevlakh District (Tailly & Tabarroni 2006). During recent studies we have recorded this species in two localities on the Caspian coast: in the Siyazan district, opposite the Beshbarmak mountain and the Khachmaz district in the village of Nabran. Unlike previous collections, we have found both males and females. An old record from Lenkoran/Lankaran is documented by Selys-Longchamps (1887).

The larva of *Sympetrum vulgatum* was indicated by Kasymov (1972); in previous researches we caught this species on the Absheron peninsula and in the Shamakhi district. In this report we present information about our findings near Lake Maralgol (Goygol district).

Pantala flavescens was previously recorded by us in the Lankaran district. Prior, it was recorded at the same place by Bartenev (1910) at the beginning of the twentieth century. We caught it on the coast of the Caspian Sea in the Siyazan district.

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Authors are advised to avoid any formatting of the text. The manuscripts will be stylised according to the font type and size adopted by the journal. However, check for: a) all species names must be given in italic, b) the authority and year of publication are required on the first appearance of a species name in the text, but not thereafter, and c) citations and reference list must be arranged following the format below.

Reference cited in the text should read as follows: Tillyard (1924), (Tillyard 1924), Swezey & Williams (1942).

The reference list should be prepared according to the following standard:
Swezey, O. & F. Williams, 1942. Dragonflies of Guam. Bernice P. Bishop Museum Bulletin 172: 3-6.
Tillyard, R., 1924. The dragonflies (Order Odonata) of Fiji, with special reference to a collection made by Mr. H.W. Simmonds, F.E.S., on the Island of Viti Levu. Transactions of the Entomological Society London 1923 III-IV: 305-346.

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